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White Company Revises Shop Management

Bonus Wage Plan and Other Mechanisms Adopted by Truck Manufacturer—Personnel Research Department a Feature—Provision for Close Touch With Employees

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THE White Motor Co., Cleveland, for many years has successfully handled its labor problems, has kept its labor turnover remarkably low, and has won the reputation of maintaining the most friendly relations with its employees. Consequently, the White plant by its policy of square and fair dealing has often been pointed out as a conspicuous example of successful industrial management.

The personnel policies followed by the White company have been carried out through three generations and have become traditional with the White family. They were first applied in the 70's in the White Sewing Machine Co.'s plant and are now followed with equal success in a motor truck plant employing 4300 people. Important changes have been made, particularly in the system of management, but the company regards the new practices as a present day application of old time principles.

With relations between management and employees always amicable the company followed a conservative policy and was slow to adopt the newer mechanisms of scientific management. While other companies were adopting new organization plans, employee representation, bonus and piece rate systems, the White company long continued to operate virtually as a one-man organization. It held to a straight day rate for labor and paid wages that kept its men contented and these were often a little higher than the prevailing rates in other plants for corresponding work.

The company's first important change in its industrial relations policy was made in 1915, when it adopted a shop committee plan as a means of exchanging ideas between the management and the men. Thus was established an open forum and no subjects are ruled out of the discussions, not even wages. However, and in this particular it is different from many other shop committee plans, the committees were given no authority. This plan, it may be mentioned, has stood the test of eight years of successful operation.

Following the trend of the times in industrial management, the White company during the past year has made important changes in its organization scheme and with these changes have come the introduction of a bonus system and the working out of various details that are required with the new system of management.

Under the new organization plan full management of the plant is vested in the vice-president in charge of manufacturing, who works through division heads. These executives, the chief engineer, head of factory accounting department, production manager, director of purchases, personnel director, and parts service manager, together with the vice-president, form an executive committee which determines all matters pertaining to plant policy.

Bonus Applied to Machine and Other Work

Under the bonus system the employees are paid the average going wages for the class of work they are doing and the bonus in addition. Time studies were made to arrive at the standard job and bonus classifications. The bonus chart is set at 100 per cent efficiency, but an employee begins to earn a bonus when his production reaches 60 per cent of the standard. If his output reaches 100 per cent his earnings are approximately 25 per cent in excess of the day rate. On the average the men earn about 20 per cent above their regular day rate. Most machine operations and considerable of the assembly work and handling of material are already under the bonus system and time studies are now being made with the view of extending it to other departments where practicable.

*THE IRON AGE, Cleveland.

WITH the relations between the management and employees notably amicable through three generations and with labor turnover unusually low, the White Motor Co., Cleveland, has followed a conservative policy. While other companies were adoptiug new plans, employee representation, bonus and piece-rate systems, etc., the White company held to a straight day rate for labor and paid wages that kept its men contented. The first important change was in 1915, when a shop committee plan was adopted. Within the past year other changes, including a bonus system as outlined in this article, have been made. The company regards the new practices, however, as a present-day application of its old-time principles.

The building of a motor truck involves thousands of operations by a class of employees ranging from common labor to the highest skilled mechanics. All work has been divided into ten classes of jobs. In making these classifications the company has taken into consideration the skill required, time required to learn the job, amount of physical strength required, whether the job is agreeable or disagreeable, whether it is a repetitive operation, and various other factors.

Three rates of pay are provided for each job in order to care for the individual skill of the operator concerned. A beginner at the job is paid the lowest rate, then is promoted to the next higher classification, then to the highest, as his skill increases. These three rates of pay are handled by classifying the job under any one of three basic classifications, for each of which the hourly rate and the bonus rate varies. For example, a job where the average operator would be classified in job class 5, would provide that a beginner would be paid at the rate for job class 4 and an expert would be paid at the rate for job class 6. This automatically cares for a basic pay, and also for a slight variation in the bonus, and enables proper reward to be given the individual.

Specifications have been prepared defining all jobs in the plant. These are typewritten on printed forms and are used to select employees and to see that as far as possible the right man is on the right job. One of these specifications, taking a typical case, shows who supervises the operation, the tools the company and the operator furnish, the material used, the technical training required for the job, the actual operations to be performed, working conditions and the amount of experience required. Other somewhat similar job specifications cover the operation of various types of machines, rather than specifying the operating details for a certain part.

Personnel Director Has Broad Responsibilities

Under the plan of the organization, the personnel director plays a part in the management. Under his department comes personnel research, supervision of training, the medical department, sanitary and safety inspection, the employment department, bulletin boards, the house organ and the preparation of job specifications. One of the personnel departments is called "Personnel Research." The problem of determining the average wage rate for various classes of jobs is one of the functions of the personnel department and the work of the research division is devoted largely to studying economic subjects that affect the rate of wages, published notices relating to wages and employment and government statistics. In other words, the research bureau gathers such information as is needed to intelligently pass on a change in rates, although the rates themselves are set by the factory executive committee. The management believes that economic information to be of any value must be both authentic and up to the minute, and through the research section it aims to have such information always available. The research section keeps a close watch on labor turnover and should the turnover become high in any particular group of employees, it investigates conditions with a view to suggesting changes that may be needed to stop the increase turnover.

Management Keeps Close Touch with Employees

The management through its personnel director has several means in getting in touch with the plant's employees, or in conveying a message to them. These include bulletin boards, moving pictures, the *White Book*, or plant magazine, which is an interesting sixty-page publication, well illustrated and brim full of matter of a personal nature that appeals to the employees, the training departments and the various meetings of the executive and shop committees. It is stated that through one source or another information may be delivered to every man in the plant in three days at the longest.

The bulletin board system is very complete. Throughout the plant are eighty glass-covered bulletin boards on which are posted photographs showing the most approved manufacturing methods for making various parts with accompanying explanations, safety posters and other matter of interest to the men. The matter on the bulletin boards is changed at least once a week. The preparation for material for these boards takes the full time of one employee and part of the time of another. What is regarded as a valuable educational feature is the use of an automatic moving picture machine which shows various approved manufacturing operations on different parts. This machine is operated during the lunch hour and the educational pictures attract a great deal of interest among the men.

The company has no training schools for factory workers. Training of workmen is entirely in the hands of the foremen and this policy has been so successful that the company has never felt the need of making an expenditure for the conduct of training schools. However, it has classes of instruction in mathematics, drawing, business English, and in the mechanics of a motor truck, and in addition a technical apprentice course is provided for college men and other employees of adequate training. Those attending the latter course are given special training in production or special work in the engineering department. Last year over 400 registered in the classes and the most of these were regular attendants at class meetings. Class sessions are held for one hour at 3:45 p. m., starting fifteen minutes after the factory closes for the day.

Starting in a modest way in 1918, the company established a liabrary, which has steadily grown and now contains 875 books owned by the company, and 1200 from the Cleveland Public Library. In addition, there is a technical library in the engineering department. The main library is located in an attractively furnished room 21 by 42 ft., connected to the manufacturing departments.

Employment Department Methods

All applicants for jobs, whether high grade technical men, girls seeking office positions, or factory labor, must pass through the employment office, where they are given identical and courteous treatment. If no position is open, an application blank is filled out and filed in case of a possible need for the service of the applicant later. All men on being hired are given a physical examination, partly to guard against infectious diseases and partly to ascertain what work the applicant is best fitted for. If an applicant proves satisfactory to the interviewer in the employment department, he is interviewed by the head of the department in which he is to work before being hired. A fairly complete record of each man is kept in the employment department; this covering his age, family condition, record in the plant and during employment elsewhere. In addition, condensed information regarding each man is kept on other cards in a visible file.

Food for the men, consisting of coffee, soup, sandwiches and pies, is prepared in a kitchen and delivered to the employees and placed on a table in the locker room. Each employee places his order for what he wants in the morning and pays for it when the order is given. However, it is optional with the men whether they buy all or any of their lunch from the company's kitchen. The kitchen supplies food to about 3000 of the employees. A large cafeteria is maintained for the supervisers and clerical force and in this 500 are fed daily.

Safety inspection work is in charge of a full time inspector, who is given outside expert assistance when needed. One standing rule in the plant is that if a practice is unsafe it must be stopped or made safe. The superintendent and foremen are held responsible for the safe condition of all equipment. The plant hospital is unusually well equipped and has a large staff, including one full time physician, six full time nurses, a part time consulting surgeon, a part time eye specialist and one employee who devotes his entire time in visiting sick workmen at their homes to see if they are getting proper treatment. The hospital facilities are provided for only immediate treatment. The company provides no medical services for the employees at their homes.

Reference was previously made to the shop committee. Each of the fifteen departments, including the office, has its own committee, and each committee member represents ten employees. The committees meet twice a month and discuss such matters as plant and

machinery repairs, replacing of tools with new, operation of the restaurant and kitchen and problems of material and the routing of work.

Good Wages Stimulate Production

The company believes that it gets more work from its men by paying higher than the average wages. It also holds that its ability to pay wages higher than the average is largely due to better than average management and that good wages are largely a question of good management. Under good management it includes skill in planning and routing of work, care in inspecting work, and in procuring uniform materials and training foremen and workmen to use skill in managing their own jobs with the minimum of supervision from the higher ranks. The company aims to inculcate principles of good production management among department superintendents and foremen. Superintendents meet frequently and foremen meet by departments once a week, their sessions occasionally being attended by representatives of the general management, and discuss changes proposed or completed in the production scheme.

Low labor turnover is an important factor in the success of the management of the White plant. As pointed out by the company, low turnover permits of high production, high production permits of higher wage earnings by employees, and high wages, low turnover, and so on. Realizing that providing steady jobs is fundamental in maintaining low labor turnover, the company is filling up the valleys and cutting off the peaks of seasonal demand by manufacturing parts for stock during the dull season and permitting the inventory to run down in the busier season. The labor turnover computed on what is known as the Rochester formula was only 24 per cent during 1922. It is stated that for the past eight years the turnover for men who have been in the company's employ five years was only 6 per cent. The plant has 56 employees who have been on its payroll over twenty years.

WILL HEAR FURNACE CASE

Supreme Court to Pass Upon Power of Federal Trade Commission to Get Cost Data

WASHINGTON, Oct. 9.—The Supreme Court of the United States today through Chief Justice Taft announced that the court would hear arguments in the Claire Furnace Co. case on Dec. 3. This case, which involves a proceeding brought by the Federal Trade Commission against 22 independent iron and steel manufacturers in an effort to compel them to submit cost data and other information to the commission, is one of the most important of the kind that has ever come before the commission. It and the Maynard Coal Co. case have been accepted as a test as to the power of the commission to compel manufacturing and mining interests to provide the commission with reports concerning the cost of production and other items of an intimate business character.

Because of the importance of the Claire furnace case, in which the commission has been defeated in the lower courts, it asked the Supreme Court to advance the date for the argument. The announcement of today of the Chief Justice was in compliance with the request of the commission, made through the Solicitor General of the Department of Justice. Contention was made by the commission that the decisions of the lower courts in the District of Columbia, the Supreme Court of the District, and the Court of Appeals by which the iron and steel interests were granted an injunction restraining the commission from gathering the desired data have hampered the work of the commission in conducting investigations. Being anxious to dispose of the question of its jurisdiction, the commission asked that the Claire case be disposed of as quickly as possible, the outcome of which will be of great importance to both the commission and to the business interests of the country. It is reported, that regardless of the outcome of the Claire furnace case before the Supreme Court, the commission will continue to push the Maynard Coal Co. case, despite its similarity to the Claire furnace case. The Maynard case now is before the Circuit Court of Appeals, the Supreme Court of the District having granted the Maynard Coal Co. an injunction against the commission as had been done in the Claire furnace case. The lower courts based their action on the contention that neither the manufacture of iron and steel nor the mining of coal constituted interstate commerce and that consequently the commission had no jurisdiction to compel the production of cost and other data.

The commission is now engaged in a study of the coal situation at the request of President Coolidge and is going over the voluminous reports of the United States Coal Commission with a view to making recommendations, which, it is said, will deal largely with a better system of distribution of coal to consumers, so as to eliminate as far as possible the profits of middlemen. It is assumed the commission, in view of the adverse decisions for it in the Claire furnace and Maynard Coal Co. cases, will not make any attempt to get cost of production figures in connection with its present coal investigation. The commission feels that inability to get data of this kind directly handicaps its work and it is believed it may seek legislation from Congress, provided it would not conflict with the constitution, so as to empower it with authority to gather the kind of information sought in the Claire furnace and Maynard coal cases.

Clay Fire and Silica Brick Prices Reduced $3 Per 1000

PITTSBURGH, Oct. 8.—Effective last Friday, prices of clay fire and silica brick were reduced $3 per 1000 in all districts. This change establishes a minimum price of $42 per 1000 on high duty clay fire brick and recognizes on silica brick prices which, as intimated in the most recent report on the refractories situation in THE IRON AGE, was quietly being done even by some of the larger producers two weeks ago. There has been a reduction of 50c. a ton in ground clay prices. Former prices for magnesite brick, grain magnesite and chrome brick are undisturbed. Business in clay fire brick and silica brick has been on a tapering scale for several months and as order books have dwindled, competition among producers has increased with the result that prices have shown considerable irregularity. This horizontal reduction of $3 was made necessary by the lower prices developed by the competition for orders. Prices are given on page 1005.

J. H. Williams & Co. Consolidate Brooklyn and Buffalo Plants at Buffalo

J. H. Williams & Co., manfacturers of drop-forged wrenches and tools, have arranged to consolidate the Brooklyn plant with the one at Buffalo. The Brooklyn property, consisting of 150,000 sq. ft. and additional land having 1252 ft. frontage in the block bounded by Richards, Columbia and Seabring Street and Hamilton Avenue, will be sold. Offering is made as one parcel but proposals to divide will be considered. James B. Fisher Co., 160 Remsen Street, Brooklyn, is agent.

Purdue University, Lafayette, Ind., will offer short courses on "Steel and its Treatment" in 20 Indiana cities during the present scholastic year. Last year classes were held only in Ft. Wayne and South Bend. The courses will consist of six meetings covering the manufacture, hardening and tempering of steel, and will be conducted by John F. Keller, of the university extension staff, under the supervision of Professor Knapp.

New Equipment Facilitates Rapid Coaling of Ore and Coal Boats

Coal conveyors are important factors in enabling ore and coal boats on the Great Lakes to load and unload quickly, but the rapid fueling of vessels so that their will be no delay in replenishing their bunkers is also an important item in effecting quick dispatch of the large cargo carriers. While the quantity of coal consumed by the lake steamers is small as compared with that carried as cargo it amounts to hundreds of thousands of tons per year.

One way of fueling the larger lake boats is by means of elevated pockets located on the docks and

Equipment for Fueling Ore and Coal Boats. The conveyor is shown with the boom folded up

provided with chutes arranged to discharge the coal direct into the fueling bunkers. Another method employed is fueling from lighters which lay alongside a steamer and fill its coal bunkers while it is loading or discharging its cargo. As it is essential that when an order is given for fueling a steamer it should be done at once so as not to cause any delay, consequently a quick means of loading these lighters is necessary.

The Pittsburgh Coal Co. is one of the largest companies handling coal on the Great Lakes and this company has fueling lighters in many of the large ports and fueling docks located on the rivers between the lakes. The latest equipment installed for handling coal from cars in which it is received at the dock to the fueling lighters has just been completed by this company at Ashtabula Harbor, Ohio. The coal is received at the dock in hopper bottom cars on three tracks having a grade sufficient to handle the cars by gravity to hoppers located underneath these tracks. Each hopper is fitted with an apron feeder which discharges the coal to a 54-in. belt conveyor. This belt conveyor is carried out over the slip as shown in the illustration and the outer end is made to fold up clear of the dock line when not in use. The extreme end is fitted with a swinging teloscopic chute so that the coal may be discharged in the pockets on either side of the lighter. The illustration shows the conveyor with the boom folded up.

This conveyor is electrically operated and the driving of the belt, the hoisting and the lowering of the boom and the operation of the chute are effected by independent motors. The feeding aprons are driven from the belt conveyor motor gearing, each apron being fitted with a clutch so that the coal can be discharged to the belt conveyor from any one of the three hoppers under the tracks. All the motions of the apparatus are controlled from the operator's cab, which is so placed that he has a full view of all parts of the conveyor as well as the coal from the time it is received in the hopper until it is discharged into a lighter. This conveyor was designed to handle coal at the rate of 1000 tons an hour, but has actually operated at a capacity of from 1400 to 1500 tons per hour.

This apparatus was designed by J. E. A. Moore, consulting engineer, Cleveland, and was built by the Pittsburgh Coal Co. for the New York Central Railroad, and operates on the latter company's tracks.

Micrometer of Great Accuracy

WASHINGTON, Oct. 9.—A micrometer of the accuracy of hundred thousandths of an inch has been constructed by the Bureau of Standards for measuring the diameter of 12-in. porcelain cylinders to be used in electrical measurements. In order to obtain this degree of accuracy, says a statement issued by the bureau, it is necessary to operate the micrometer from a distance and to take readings from it through a telescope lest the heat of the observer's body warp the thick steel ring enough to cause an error. Both instrument and cylinder must be kept in a constant temperature box during the measurement.

The micrometer consists of a cast iron ring large enough to pass easily over the 12-in. cylinders. On opposite sides are the micrometer screw and the contact pin, while at right angles are adjustable lugs for centering the device on the cylinders. The micrometer screw is driven by a tiny electric motor and when it has pushed the cylinder against the contact pin, the latter breaks the motor circuit and stops the screw. The whole device, when in use, is suspended by three light rods and can move freely the short distance required.

The cylinders which are to be measured will be wound with wire on a precision lathe and will form inductance coils of very accurate construction whose inductance can be calculated from the dimensions.

This research is part of a program for standardizing all of the electrical units in terms of the fundamental standards of length, mass and time.

Inland Negotiates to Take Over Smaller Plants

While the Inland Steel Co., Chicago, has not yet purchased the Acme Steel Goods Co., Chicago and the Milwaukee Rolling Mill Co., Milwaukee, as recently reported in some quarters, negotiations to that end are in progress with the possibility of their completion within the next two or three weeks. The Acme Steel Goods Co. has a plant in Chicago with an annual capacity of 30,000 tons of light cold-rolled strip steel, and a plant at Riverdale, Ill., with a production of 60,000 tons of hoops and bands annually. It is also constructing a large new cold-rolled strip mill at Riverdale, which will be completed in November. The Milwaukee Rolling Mill Co., Milwaukee, Wis., incorporated in 1920, has eight hot sheet mills and four stands of cold rolls, with an annual capacity of 85,000 tons of black and galvanized sheet.

Welsh Steel and Tin Plate Companies Combine

A newspaper cablegram from London states that Richard Thomas & Co., steel and tin plate manufacturers of Swansea, have acquired more than 80 per cent of the shares of the Grovesend Steel & Tin Plate Co., also of South Wales. The latter company will remain a separate entity, but there will be a complete fusion of interests.

The combination will have 159 tin plate mills with a capacity of 8000 tons per week, while the steel output at full capacity will be about 12,000 tons per week.

Outlook in Machine Tool Building

Immediate Promise Not Good but Bright Future Forecasted for the Makers of the Master Tools of Industry at Meeting Last Week

MACHINE tool questions affecting the metal working industries generally were discussed at the annual meeting last week at Lenox, Mass., of the National Machine Tool Builders' Association. Frank statements were made of a present unsatisfactory state of demand for machine tools and of a poor outlook for the immediate future, but of the ultimate activity the meeting was highly encouraging in pointing out the definite trend toward things mechanical and toward continued further improvement of existing mechanisms, all calling for new machinery and more metal cutting and therefore for more machine tools.

To this picture of what is to come, Edward J. Kearney, secretary and treasurer of the Kearney & Trecker Corporation, Milwaukee, and retiring president of the association, made the outstanding contributions. His presidential address, reviewed at some length elsewhere, outlining chiefly the marked strides being taken by the railroads to improve mechanical devices, succeeded in creating the belief by inference that there is an unmistakable expansion broadly in the industries in the way of devices and mechanisms for labor saving and efficiency promotion. It should be added that his address had another aspect and that was that the transportation act must not be tampered with by the next Congress, that transportation is too vital for the country's welfare to be made longer a football of politics and that if the railroads are given a chance to continue to work out their salvation, needed improvements, recognized by many of the railroad executives as necessary, will forthwith be made, including even the replacement of antiquated shop machinery by machine tools which may require in some cases only one-third the number of men now employed.

In respect to the prospects of the machine tool builder, Mr. Kearney in the course of the meeting, referred also to an important development in the art of printing calculated to bring about a new and large manufacture of printing machinery. For the next few months he described business as likely to be neither good nor bad, "but in ten years," said he, "or maybe in five, we shall make more tons of machine tools than ever before in our history."

Other features of the meeting were these: A preliminary report on what may be termed an ideal division of the country for dealer territories; a consideration of splitting commissions between dealers when a machine is bought in one agent's district and delivered in that of another—these covering a conference between representatives of the manufacturers and representatives of the dealers; a tentative draft of a code of ethics and approved business practices, and a specific illustration, explained by General Manager Ernest F. Du Brul, of how one machine tool builder successfully steered his course in the light of the statistics collected by Mr. Du Brul, for all the group of manufacturers making a given type of machine.

The sentiment of the meeting was formally taken at one session and indicated unanimous approval of the present arrangement of convening outside of the large cities and limiting the attendance practically only to members. If it were necessary to describe briefly the achievement of the convention it would be to say that the members have further cemented the friendships and understandings made possible by the few meetings of the present type, particularly in this last one by definitely recognizing on the program the desire for relaxation, such as reserving the forenoons for the playing of golf.

Officers and New Directors

R. E. Flanders, manager Jones & Lamson Machine Co., Springfield, Vt., was elected president for the ensuing year by the board of directors. He was one of the directors elected at the meeting, the others being H. M. Lucas, president Lucas Machine Tool Co., Cleveland, and J. G. Benedict, treasurer and general manager Landis Machine Co., Waynesboro, Pa., and also H. P. Dix, secretary and general manager Wilmarth & Morman Co., Grand Rapids, Mich., elected for the unexpired term of the late Winslow Blanchard, O. B. Iles, president International Machine Tool Co., Indianapolis, was elected first vice-president and Frank N. MacLeod, president Abrasive Machine Tool Co., East Providence, R. I., was elected second vice-president. Mr. Lucas was elected treasurer.

R. E. FLANDERS

Elected President of the National Machine Tool Builders' Association. He is manager of the Jones & Lamson Machine Co., Springfield, Vt., a member of the American Engineering Council of the Federated American Engineering Societies and represents the American Society of Mechanical Engineers on the National Screw Thread Commission. He began as a machinist apprentice in the shops of the Brown & Sharpe Mfg. Co., Providence, in 1897. He was four years associate editor of *Machinery* and joined the Jones & Lamson company in 1912

About half of the membership was present. The meeting took place at the Aspinwall Hotel, Lenox. The first regular session was held on the afternoon of Oct. 2 and there was a session on the evening of that day and a round-table discussion provided on the afternoon of Oct. 3. The evening of Oct. 3 and the morning of Thursday, Oct. 4, were reserved for the usual committee meetings.

The convention voted a strong resolution against any amendments being made to the transportation act.

Learning that Past President J. B. Doan, president American Tool Works Co., Cincinnati, was temporarily confined to a hospital at Utica as the result of an automobile accident, a telegram of good wishes was sent to him.

Numerous topics were submitted for the round-table discussions but there was no active participation in this portion of the program. Mention was made of a plan offered by a Mr. Evans whereby sheets of standards could be drawn up for the benefit of designers, covering the matter of pulley sizes, widths of belting, spindle diameters, sizes of tee-slots and the like, and the president appointed as a committee to look further into the standard data sheet Mr. Lucas and E. P. Burrell, Warner & Swasey Co., both of Cleveland.

Little was said about the prospects of export business. More particularly it was mentioned that the outlook for doing much business with England was poor, due to high prices from the British standpoint, a reaction following the American tariff and a belief that they, the British, are making good machines.

Matters of Research

Mr. Flanders told how steps are now in progress for investigating the strength of gear teeth with the

object of producing a new formula to replace that contributed some 30 years ago by Wilfred Lewis of Philadelphia. The factor to be investigated is the extent that stress increases as the speed increases. This was arbitrarily held to be a fact originally but with better tooth surfaces and outlines common today it is the view that stress does not increase as much as was thought. Mr. Lewis has devised a scheme requiring a special mechanism which will do the testing without destroying the gears and the importance of the investigation lies in the possibility that lighter gears and gears of narrower faces will hereafter be satisfactory for given requirements. The preliminary estimate of the amount of money required is $3,000 and the American Society of Mechanical Engineers has appropriated $400 and Mr. Flanders' explanation was introductory for making a request for contributions from individual companies.

The subject brought up anew the desirability of the association's going vigorously into research work. A stimulating speech on this score was made by Fred A. Geier resulting in a motion, seconded by Edward D. Welles, for the appointment of a committee for technical research. A part of the discussion revolved round the need of a standard respecting the material handled by a machine tool, and E. P. Bullard, Jr., told how in the Bullard shops a given material was compared with a standard which was a material which could be penetrated to a distance of 1 in. in 40 sec. by a definitely weighted drill. A material would be hard or soft according to whether the penetration took a longer or less time than the standard.

The report on the code of ethics was made by H. M. Lucas as the chairman of the committee, of which the other members are F. L. Eberhardt, president Gould & Eberhardt, Irvington, Newark, N. J., and A. H. Tuechter, president Cincinnati Bickford Tool Co., Oakley, Cincinnati. The committee was requested to consider the subject further and submit its revision at a later meeting.

The report of the committee covering the conference with dealers was made by Chairman J. Wallace Carrel, vice-president and general manager Lodge & Shipley Machine Tool Co., Cincinnati. A map of the United States sub-divided in respect to the ideal territories is to be supplied to the members. The division was offered particularly as likely to be helpful in forming new connections or in revamping old territories whenever the desirability or opportunity may arise. As to the splitting of commissions, the meeting took an almost unanimous stand that 50 per cent ought to be sufficient in the average case for the dealer in the territory where the order originates and 50 per cent for the dealer in the territory of destination.

Following are extracts from the address of President Kearney and report of General Manager Du Brul.

Transportation—The Master Key to Progress*

BY EDWARD J. KEARNEY

Retiring president, before the National Machine Tool Builders' Association

MACHINE tools are called, and rightly so, the "Master Tools of Industry;" but they are not a primary product, creating their own demand, or connected, except very indirectly, with individual consumption. They are the instruments necessary to the creation of machines that themselves reach the final consumer, such, for example, as carpet-sweepers, automobiles, and radio outfits, and also for the creation of machines that are many times removed from the ultimate consumer, such, for example, as the steel mills that make the rails, that carry the locomotives, that draw the cars, that deliver to the consumer the carpet-sweeper, the automobile, and the radio outfit. So it turns out that new developments to which we look to give impetus to our industry are not of our creating. When a new machine, or a more highly developed old one, presents a demand, either for greater precision of manufacture or increased production at less cost, we meet that demand and in that way make our contribution to progress.

During the last 60 years there have been many new developments that were of such magnitude and which came forward with such a rush, that they, together with production already established, created a peak demand for machine tools. Every one of these forward movements left the industry on a higher level than before. Among the developments that have given this added impetus to the industry that may be mentioned as examples are the sewing machine, the electric generator and motor, the bicycle, and the automobile.

Reaction After Post-War Boom

The reaction following the artificial stimulus of the war and the post-war boom, when machine tools were in uncompromising demand, has not yet left us. Our suffering has been long and intense. The statistics which we began to gather in 1920 show that as compared with the first quarter of that year, the business of the third quarter of 1921 was only 10 per cent, due to both reduced prices and reduced volume. The gradual improvement that has been made since shows that our factories, taken as a whole, are now working at only about one-third of their capacity. Under such conditions, it is not surprising that many of our members have been forced into receiverships, and the strongest have seen their surpluses diminish, and, in many cases, their capital impaired. There are no figures on which to base the assertion, but it is my belief that a combined financial statement of the industry made now, as compared with three years ago, would show a shrinkage or net loss of at least 25 per cent in the total net value of the industry. When we met in annual convention three years ago, we had on our membership roll 209. Today, it is reduced to 135.

It is not known among business men generally that the machine tool industry suffers during the downward swing of the business cycle to a far greater extent than ordinary manufacturing lines, for the reason that our product is bought mainly during periods of expansion. The carpet sweeper manufacturer, when his business shrinks 5 per cent, buys no more machine tools, so that our business, as far as he is concerned, falls 100 per cent. The example could be extended almost indefinitely. If we were sufficiently numerous to be of importance in our national elections, attempts would long ago have been made to capitalize our distress at the polls. Is it therefore any wonder that we are asking one another whenever we get together by two's and three's, "What is the next development that will sustain the machine tool industry?" Every one has an answer. I have mine. It is general, mechanical, industrial, and agricultural development and prosperity, with transportation the master key to progress. Unfortunately there are certain elements in our political life that would throw the key into the well and prevent entrance into that temple of well-being—"universal prosperity."

Future progress depends on adequate transportation facilities. So important is this that it should be a matter of the most serious concern to every business man and citizen. It is this view that leads me to present an outline of the case and show where we can do something for ourselves and in the public interest.

There are few people not actively connected with railways or who have not made a study of their growth, who have any idea as to the enormous extent to which transportation in this country has grown, or to where

*In his address Mr. Kearney told in some detail of a tour of inspection and interviews with railroad officials and workmen and described at length what the railroads are doing to keep pace with demands, such as improvements on locomotives.

it will lead with the present rate of growth continued. This is why we should be concerned.

Demands on Transportation Systems

In 1880 the per capita travel was approximately 100 miles, which has continued to grow steadily during each decade until it is now about 400. These figures show their true comparison when it is recollected that the population of the United States in 1880 was only 50,000,000, meaning that the number of passenger miles traveled at the present time is over eight times what it was in 1880.

When we come to the study of the subject of freight, we find a similar condition with the difference that the rate of increase is much more rapid. The per capita ton miles rising steadily during the period, multiplied itself about six to one. In 1880 the number of tons of freight hauled one mile was 32 billion; while it is estimated that for the year 1923 it will be beyond 415 billion.

Keeping the Equipment in Service

One of the greatest economies in railway operation is to keep the equipment in use the greatest possible amount of time. In our own business we recognize the value in reduced overhead when our equipment can be used full time, or better still with more than one shift. The same is true of railway equipment. In order to bring this about, there must be facilities for taking care of locomotives at the terminals so that they will be the least possible time out of service. This means better and larger roundhouse facilities, sanding and coaling devices, boiler washing equipment, and last, but certainly not least, modern machine tools for both the roundhouse shop where temporary and emergency repairs are made, and for the general shop where thorough overhauling is done.

Mechanically the railroads are on the way to handle the ever-increasing volume of traffic and to do it so much more economically as to give promise of ultimate freight rate reductions. Our opportunity is in using our influence with those in authority to promote and maintain a Government policy favorable to the development of transportation, the master key to progress. Vital to mechanical progress by the railway is the investment of vast capital. Underlying such investment is confidence in the stability of railway income. Behind this in turn is stability of Government policy. Efforts are being made to repeal the act or so as to amend it that the revival of railroad credit will be impossible and public interest suffer irreparable damage. The immediate objective is a further trial of the transportation act without experimental amendments. In future years the objective is so to guide the progress of perfecting the law that always embedded in it will remain the principle of net income adequate for the attraction of investment capital.

Status of the Machine Tool Industry*

BY ERNEST F. DU BRUL

SINCE our last convention there has been some further recession in orders. At our last meeting we wondered if the slacking off in April was merely a temporary fluctuation. It now looks as though it would be wise to consider the signs, to see if demand is likely to pick up to the March level, which was itself considerably below capacity.

The business cycles have been running from 32 to 44 months, from top to top, or from bottom to bottom. January, 1920, was the recognized peak of the post-war boom—38 months. Later, March, 1923, was a peak. In 1920 it was several months after the peak had passed before men were willing to face the fact that a slump was on.

We have now passed 44 months since the January, 1920, peak, so unless previous history reverses itself, due to causes not now evident, we can fairly believe that business is on a normal down swing at this time.

The machine tool business, compared with some others, got but little action during this period. From signs now apparent it seems to be prudent to prepare for a decidedly lower scale of demand from now on, and therefore to beware of expanding inventories at this time. Hand to mouth schedules are not easy to operate, nor are they pleasant to contemplate, but they seem to be the safest schedules to work to for some months to come.

As nearly as we can estimate from the units shipped by the firms reporting units in certain groups, shipments have been running somewhere around 60 per cent of the 1913 monthly average for the last few months. Taking the war peak as a basis of comparison this means somewhere about 26 per cent of capacity. Of course the war peak was reached by overtime, night shifts and other such supernormal utilization of plant, but in face of plant additions the present shipments are certainly still far below capacity, measured on a one-shift basis.

When the indexes seem to point quite markedly to some recession, should we not be hopeful pessimists rather than reckless optimists? We always have time in this industry, after a decided upturn in general business, to prepare for an oncoming demand for machines. This industry has to worry more about getting overloaded with inventories just before a slump than it does about not having goods enough to supply legitimate purchases on a rise. Even though some seasonal rising movement should develop this fall, it would not be in accord with previous experience for it to continue very long.

Studies of Sales Ratios

Dozens of special services have been rendered to individual members in the past few months, covering about all the subjects listed on our activities chart from accounting to traffic. This is a very gratifying development of the association's work—most of it being of a highly confidential nature.

During the summer the members were asked to join in a study of the ratios of sales to merchandise, sales to fixed assets, and sales to net worth. Twenty-six reports were received from member companies. They are of such different size and manufacture such a variety of product as to be fairly representative of the industry. Averaging these ratios gives some interesting side lights on the financial problems of the industry. A most significant condition is shown by these ratios; a great change seems to have occurred in the rate of turn-over of merchandise, compared to the turn-over of fixed assets. This is strikingly shown on the charts of the results of this study.

In the years 1911, 1912, and 1913, the yearly turnover of merchandise was about 250 per cent, while the turn-over of fixed assets was about 150 per cent. During the war years these ratios came together so that in the years 1919-1922 the inventory turn-over was at just about the rate of turn-over of fixed assets. Does this mean that costs have climbed faster than prices, or has the industry been injudicious in expanding inventory out of proportion to sales possibilities? Whatever the cause of this radical change, it deserves consideration.

A ratio of turn-over lower than before the war shows that the inventory must now be higher in proportion to sales than it was before the war. Each executive should study his own condition to see whether he has too much stock on hand in proportion to his sales. He has little hope of reducing the cost factor of the inventory units. If he cannot reduce the quantity carried, improvement in the ratio can then be realized only by selling more units at the same price, or by getting higher prices per unit sold. But when the quantity sold lies very largely outside of his control,

*From the general manager's report for the annual convention of the National Machine Tool Builders' Association.

he can only look to the price factor for improvement. Here he is limited by competition.

This very limited ratio study has in itself proved the need of much more consideration of finance being given by the executives of the industry. Naturally slow turn-over of fixed assets and inventory requires a relatively high rate of profit to yield an adequate return on investment. Besides a slow rate of turnover, our industry is subject to long periods of depression. It can make its profit and accumulate its reserves only in short spurts of activity.

To this uncontrollable condition add the fact that the tax laws make no allowance for losses in years of depression to offset the gains during the active years. On top of all this throw demands for excessive service to some customers that more reasonable users do not require. Throw on also the complaints that machine tools are too expensive, even though they often save their cost in four, and six months. Add a number of other troubles, and you have quite a bed of thorns on which the "Makers of the Master Tools of Industry" are expected to lie in luxurious ease.

Cooperative study of the facts is necessary before the industry can combat the evils that it complains of. Those executives who know the bearing of these facts owe it to their own stockholders to join in such study, not only for their own information but for the education of those who are not well informed.

Machine Tool Research

Since our last convention several research movements have started in connection with machine tools. Most notable of these is an appropriation of $10,000 per year, from the Michigan Manufacturers Association, placed at the disposal of the University of Michigan for research on questions affecting machine tool design.

The American Society of Mechanical Engineers has appointed a sectional committee to act as a clearing and steering committee on machine tool research. This committee hopes to make available all possible research already done in connection with machine tools. It also hopes to get in touch with all work now going on, so that unnecessary duplication shall be avoided. In addition to this clearing function, the committee will act as a steering committee to set out the main problems in the order of their importance to the industry, and to urge that these be taken up in advance of less fundamental things.

Utilizing Association Statistics

Some of our members still labor under erroneous ideas of our work on statistics. Some think that the statistical work is a burden on our budget. We have five groups making unit reports of orders, shipments and production. These are the lathe, radial drill, upright drill, shaper and milling machine groups. These reports now take up none of the general manager's time, unless something outside of routine work comes up.

With group reports of orders to show the actual course of demand for specific machines, every contributor can plan his own financing and sales production schedules to better advantage. With specific information before you, you can slow down production of slow selling sizes, and speed up on the faster sellers. You can revise your production schedules if a wave of cancellations is reported. You will not be misled into expanding your plant beyond reason, because of a temporary spurt of orders; nor will you work overtime to accumulate a high cost stock when demand is really dropping off.

If your own orders are not coming in as fast as the figures show they ought, you can spur your sales department or push your designers into getting out those improvements that should have been made. If unfilled orders show excessively high you know that you can choose your business; if low you know that you have to fight for business. If shipments are below capacity while current orders are above capacity, you know that production trouble is afoot somewhere. If stocks are high relative to demand, you sense that somebody is going to be pressed for cash. If stocks are low, and demand high you know that production must be pushed up or new competition will spring up to supply the demand. Statistics tell us a lot of things if we will only listen to them. Our reporting groups know that this service is valuable.

*Mr. DuBrul displayed a number of unusually interesting charts. One group showed how one manufacturer compared his own monthly experience with the totality of figures compiled for all makers of his type of machines and was thus able to avoid for example increasing stocks when he should not. He also showed a pig iron price forecasting chart by which he believes he can closely prophesy the trend and extent of pig iron price movements. Also he had on view his arrowhead curves to give at a glance the simultaneous relation and the import of such factors as orders, production and shipments of a given commodity.

Link-Belt Acquires Meese & Gottfried Co.

Charles Piez, president of the Link-Belt Co., Chicago, announces the purchase of the Meese & Gottfried Co., San Francisco, Los Angeles, Seattle and Portland. For the past 10 years Link-Belt Co. has been distributing its products on the West Coast through its subsidiaries, the Link-Belt Northwest Co. of Seattle, and the Link-Belt Pacific Co. of San Francisco. Improvement in distributing facilities is effected by the consolidation and additional manufacturing facilities acquired.

Meese & Gottfried Co. and its predecessors have been manufacturers of power transmission machinery and distributers of conveying and transmission machinery on the Coast for more than 40 years. The new organization will be known as Link-Belt Meese & Gottfried Co., with headquarters at San Francisco. The officials will be: Charles Piez, chairman of the board; B. A. Gayman, president; Harold H. Clark, vice-president and sales manager; Leslie W. Shirley, treasurer and Richard W. Yerkes, secretary.

Mr. Yerkes went to Chicago from the Link-Belt Philadelphia plant, as the newly-elected treasurer and secretary of the Link-Belt Co., to succeed Mr. Gayman. All officers, with the exception of Mr. Piez and Mr. Yerkes, are located at the company's headquarters at San Francisco.

In Seattle, the Link-Belt Northwest offices, warehouse and shop will house the new organization, while at San Francisco, Portland and Los Angeles, the former Meese & Gottfried plants and offices will be used. Offices, plants and warehouses are now as follows: San Francisco, Nineteenth and Harrison Streets; Los Angeles, 400 East Third Street; Seattle, 820 First Avenue, South; Portland, 67 Front Street.

The Link-Belt organization now has manufacturing plants at Chicago, Philadelphia, Indianapolis, San Francisco, Seattle and Toronto, Ont.

During the current year the Polish State Railways expect delivery of 43,880 uew cars, 6375 of domestic manufacture, and 7505 of American 30-ton type, at present in course of delivery out of excess army stocks from the United States, says a report received by the Department of Commerce from the office of the Assistant Trade Commissioner at Warsaw. A deficit of 4050 cars will exist over the estimated requirements for the year. This deficit will be covered by hiring 1737 cars, by the use of foreign return cars and by cars furnished on the basis of agreements covering the use of freight cars in international communications.

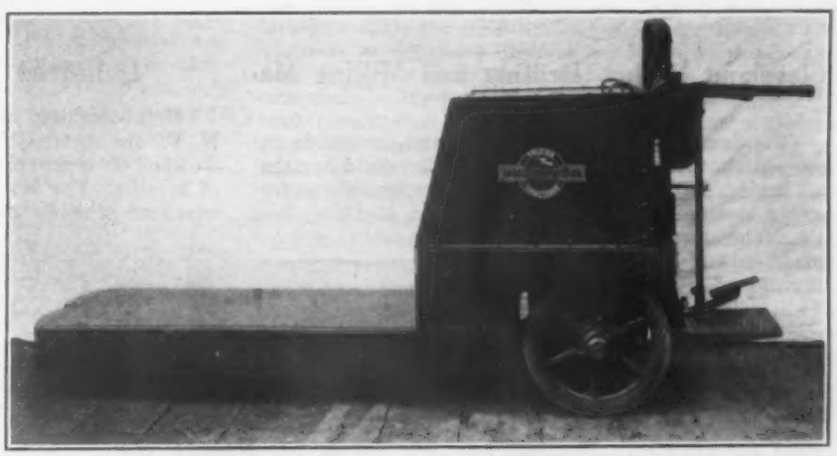
James B. Clow & Sons, manufacturers of cast iron pipe, plumbing supplies and heating apparatus, Chicago, have purchased the plant of the Sullivan Machinery Co., manufacturer of mining machinery, on the east side of Talman Avenue, east of the Chicago & North Western right-of-way, running from Lake Street north to Fulton Street, Chicago. The ground area aggregates approximately 149,000 sq. ft., and the total floor area of the buildings is 142,000 sq. ft. This plant was vacated when the Sullivan Machinery Co. moved to its new works at Michigan City.

Adds to Line of Industrial Trucks

The Crescent Truck Co., Lebanon, Pa., has added to its line of industrial trucks a four-wheel tractor, designated as the type TT-23, and a type GEL elevating platform truck.

The four-wheel tractor, shown in the left-hand illustration, is designed for heavier work than the company's three-wheel tractor in pulling loads carried on trailers and pulling or pushing machinery or other heavy material into desired locations. It has two wheel drive and two wheel steer. The normal and ultimate draw bar pull is 600 lb. and 2400 lb. respectively, and the speed is 7 to 8 miles per hour light and 5 to 6 miles per hour under load. The wheel base is 42 in.

The Four-Wheel Tractor Is for Pulling Loaded Trailers or Pulling or Pushing Heavy Machinery into Place. The elevating platform truck handles loads on skids, platforms or portable bins



The drive is through a hardened steel worm to a bronze wheel, four pinion bevel gear differential, self-alining ball bearings, to full floating chrome-nickel steel axle shafts. A General Electric Co. 48 volt, 45 amp. 1500 r.p.m. motor is used. The controller is of the drum type, ¾-in. fingers, adjustable, three speeds forward and reverse, the safety switch being also of the drum type and integral with the controller. The circuit is broken automatically when the operator leaves the seat. The brake is of the external contracting type mounted on the drive shaft, and is operated by foot pedal. Heavy bumpers, which are steel castings, are provided front and rear. The overall length is 80½ in., height 52½ in. and width 44 in. The weight of the chassis, without battery, is 2250 lb.

The elevating truck, shown in the right-hand illustration, is for handling material on skids, platforms and portable bins. The platform of the truck may be raised 4½ in., which is accomplished through the truck's power mechanism, and the platform may be raised while the truck is in motion. The truck may also be used as a straight platform truck when material not on skids is to be moved. The capacity is for a load of 4000 lb. and the speed is 6 miles per hour light and 4½ to 5 miles per hour with rated load. The wheel base is 58 in. The tread of the driving wheels is 30 in. and of the trailing wheels 14 in. A General Electric Co. motor is used and a Cutler-Hammer drum type controller providing three speeds forward and reverse and having ¾ in. adjustable fingers. The safety switch is integral with the controller and connected with foot brake pedal.

A separate motor is employed for the elevating mechanism, which consists of inclosed chrome-nickel steel reduction gears, hardened and ground jack-screw and bronze nut, ball thrust and radial bearings, solenoid brake, drum type control switch on the dash, and a limit switch. The platform, which is of ¼ in. steel plate, is 11¼ in. high when in down position and 15¾ in. high in the up position. The time to raise and lower the platform is 10 and 7 seconds respectively. Steering is by means of a vertically operated hand lever, all four wheels being steered. Steering knuckles pivot on ball thrust bearings.

The overall length is 108 in., the width 39 in. and height to steering lever 43 in. The chassis, without battery, weighs 2550 lb.

A Book on Die Castings

The Doehler Die-Casting Co., Brooklyn, has published an illustrated booklet, 4½ x 7½ in., 84 pages, devoted to "Die-Castings; Their Manufacture and Use."

The term "die-casting," as used by engineers in this country, applies to metal castings made by forcing molten metal, under pressure, into a metallic mold or die. The origin of the name is not known, having simply grow up with the industry. The term "pressure casting" is synonymous with "die-casting" and is undoubtedly more descriptive of the product. However, the name "die-casting" has been almost universally adopted for this product in the United States.

Prefacing its booklet with the above explanation, the Doehler Die-Casting Co. proceeds to a thorough discussion of the processes employed in the work, including details regarding the design of dies, design of die-cast parts, cost of dies, life and maintenance of dies, cost of castings, etc. The success met with in the die-casting of zinc, tin, lead and aluminum base alloys, has stimulated attempts to produce die-castings from copper-base alloys, such as the brasses and bronzes, and to this work the booklet also devotes a chapter. Data sheets giving instructions in the use of various metals for die-castings of various kinds occupy a portion of the booklet. Many illustrations show the great variety of products which can be made from die-cast parts. The booklet is of value to engineers, manufacturers and others interested in any way in the use of die-castings.

The rail mill of the Algoma Steel Corporation, Sault Ste. Marie, Ont., has been shut down for an indefinite period. As a result of the completion of rail orders the company recently blew out one of its blast furnaces and now has three furnaces blowing, one of which is on foundry and two on basic. Pig iron is being sold in the United States.

BLAST FURNACE SKIP HOISTS*

Characteristics of Single-Bucket Equipment as to Control of Hoisting Speeds

BY A. C. CUMMINS AND A. R. LEAVITT

IN one skip hoist studied, the first 30 ft. of the incline is at an angle of 45 deg., the next 130 ft. at an inclination of 68½ deg., while the final 20 ft. is at an angle of 20 deg. Each time the angle of inclination of the hoist changes there is a difference in the horizontal and vertical components of bucket velocity and in the relation of each to the other. If the changes in components of the velocity occur too rapidly, bucket oscillations are produced. In the case of this particular hoist, this feature of the design of the incline necessitates operating the hoist at reduced speed past both points of change of incline slope. Such a condition imposes a severe handicap on the performance of the hoisting equipment for a number of reasons.

(a) So much time is consumed in passing over the slow-speed portion of the incline that the maximum speed must be made excessively high, to compensate for the time so lost. The motors must, therefore, be larger, the peak power demand is higher, and the rheostatic losses greater.

(b) High ratio of high speed to low speed gives poor torque characteristics on some types of hoist, even though field control is used. The writers found at one plant that operators frequently must operate magnetic controller by hand, in order to pull buckets that were stuck on the incline on that account.

While there is no question that blast furnace skip hoists are giving reliable and fairly efficient service throughout our furnace plants, tests made indicate that there is still room for improvement. Can the electric hoisting engine stand a comparison with a Unaflow steam hoist if it wastes 73 per cent of the useful energy in heating resistance, as is now done in the single-motor equipment tested? Even in the modern two-motor equipment 43 per cent of the total energy is used to produce useless heat. It is, therefore, desirable in future installations that attention be paid, not only to obtaining rugged and reliable hoists, where a minimum of service interruption will occur, but also to those features which will bring the efficiencies and performances of our hoists to a point corresponding to the rapid advances in efficiency being made in other branches of our profession.

With this end in view, it is suggested that the following general features be kept in mind when making blast furnace hoist applications.

1. Keep the maximum hoisting speeds as low as possible, and the accelerating rates as high as possible. Keep the period of operation at slow-down speeds short.

2. Keep the incline free from changes of inclination, if possible, but if such changes cannot be avoided have them located near the extremities of the incline.

3. Consider the use of types of control which avoid large rheostatic losses, because of the smoother accelerating characteristics, greater efficiencies, greater simplicity, and reduced peak power demands.

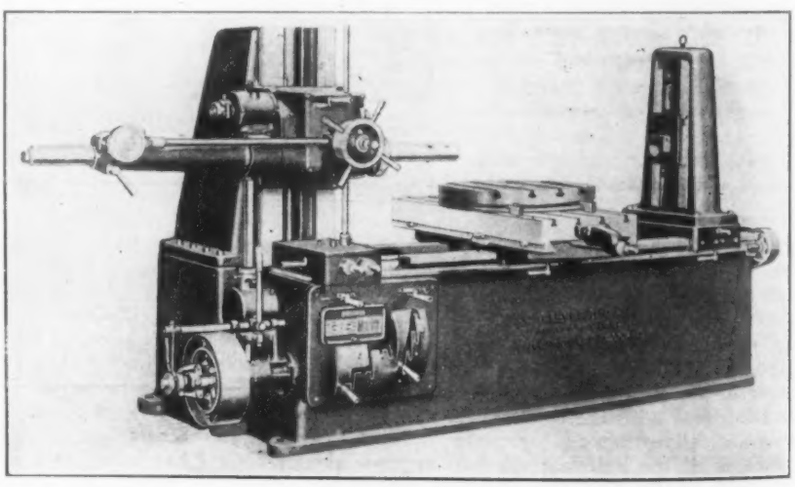
*Abstract of paper read at Buffalo convention of the Association of Iron and Steel Electrical Engineers. Both authors are in the electrical engineering department, Carnegie Steel Co., Duquesne, Pa.; Mr. Cummins is electrical superintendent.

Cleveland Boring, Drilling and Milling Machine Improved

The Sommer & Adams Co., Cleveland, has made important changes in the design of the Cleveland horizontal boring, drilling and milling machine which was formerly manufactured by the Cleveland Machine Tool Co. The outer support has been made wider and is now tapered instead of straight as formerly. This, which in the old machine was a single arm with an overhead, has been made a double support, being supported on both sides of the bed. These changes make the head wider at the base and of more rigid construction. The bed has also been redesigned and is of the deep box type, strongly ribbed on the inside.

All gears are inclosed and centralized control is provided, all handles being operated from one working position. The machine is driven by a 14-in. constant speed pulley with a 4-in. belt and has 12 speed changes in geometrical progression. The platen has four ⅝-in. T slots, a working surface of 20 x 42 in. and a power transverse feed of 30 in. in either direction. There are 16 head platen and bar feeds, 8 for each position of the spindle back gear. All feeds are reversible.

The machine is supplied either with or without a swiveling table above the platen. Its principal dimensions are: Diameter of spindle, 2½ in.; Morse taper No. 5; traverse of spindle, 23 in.; range of feed per revolution of spindle, 0.005 to 0.333 in.; vertical adjustment of head on column, 18 in.; minimum height above platen to spindle, ¾ in.; maximum height above platen to spindle, 19 in. The maximum distance from the face of the platen to the center line of the outer support is placed at 5 ft. in the machine as now designed.



The Outer Support Has Been Made Wider and Is Now of Tapered Construction. The bed has also been redesigned

Industrial Activity at Rochester

Metal-working and other industries at Rochester, N. Y., are running full for the most part, with orders on hand to insure this basis of operation for a number of months. The Northeast Electric Co. has adopted an overtime schedule at its electric equipment manufacturing plant, and expects to continue on this basis for at least six months. The Gleason Works, manufacturer of gear-cutting machines, is maintaining active production with regular working force, as is also the Taylor Instrument Companies. Operations at the Eastman Kodak Co. plant have reached the highest point in the history of the organization, giving employment to close to 10,000 operatives in different departments. The Bausch & Lomb Optical Co. is running under heavy production and reports a good volume of incoming business. The Stromberg-Carlson Telephone Co., manufacturer of radio equipment, is maintaining a good basis of production, with full working force.

Steel Needed for Mexican Railroads

Rehabilitation Will Require Large Quantities in Rolling Stock and Trackage—Prospects of Business Coming to the United States

BY JOHN EOGHAN KELLY*

"THE Government is to make prompt return of the National Railway System to private management and to the control of a board of directors agreed upon with the committee. It recognizes its obligation to restore such railroads, including rolling stock, to their condition at the time the Government took over the railroad lines." (Page 7.)

The foregoing paragraph from the "Agreement for the Readjustment of the Mexican Debt" is of the utmost interest, not only to the equipment manufacturers, but to holders of Mexican bonds and to American business generally. For Mexico is one of our best customers; in 1921, without recognition, and with large portions of the country stagnant commercially, the volume of American trade was greater than with France or with Italy. Since the National Railways of Mexico reach every part of the republic except the upper Western corner, and are by far the greatest common carrier, American trade and interests in Mexico will prosper in direct ratio with the condition of the National lines.

Of the 22 issues of Mexican bonds totalling $508,830,777 which are included in the agreement, 14 with a value of $243,734,777 are railroad bonds. Of these, the greater portion cover all or parts of the National system, the remainder the so-called "Anexos" or operated lines. The value of the bonds depends not only upon the stability of government, but upon the earnings of the railroads, and the earnings bear a close relation to the condition of the roads and their ability to handle increased traffic.

The National System

The National system, including the operated lines, contains some 10,000 miles of trackage, about 75 per cent of which is standard gage, with 60-lb. rails. The system connects the important inland cities, such as Mexico, Guadalajara, Saltillo, Monterey, Torreon, Chihuahua, Durango, San Luis Potosí, Zacatecas, Aguas Calientes, Puebla, Oaxaca, Victoria, etc., with the frontier and the ports at Tampico, Vera Cruz, Puerto Mexico, Suchiate, Salina Cruz, Manzanillo, Juarez (El Paso), Piedras Negras (Eagle Pass), Laredo, Camargo and Matamoras (Brownsville). Only one of the privately owned systems, the Southern Pacific of Mexico, serves independent territory, and that region contains few cities of importance. For commercial existence, Mexico is practically dependent upon the National lines.

With the exception of short branches, the entire system is in operation, with schedules closely approximating those of pre-revolutionary days on the main lines. The line from Laredo to Mexico, the principal artery, is in first class shape, with two passenger trains daily in each direction, delays being once more the exception, not the rule. The cars are clean, and Pullman cars operate on the Mexico-Laredo, Mexico-El Paso, Mexico-Guadalajara, Monterey-Matamoras lines. Cars of Pullman construction, owned by the Government, are operated on the Southern lines.

Worked Wonders

Compared with conditions as they existed in 1917, when the railways were at their worst, the administration of the National lines has worked wonders. Other countries might well take a lesson from Mexico in Government operation of railroads. One of the few ameliorations, in 1917, of a ride in a windowless, dusty car, bumping over uneven tracks and packed with tatterdemalion soldiery, was listening to newly arrived students of Spanish striving to pronounce the glaring legends on the car's sides: "Constitucionalistas de Mexico," as President Carranza renamed the National lines.

To return the lines to the condition in which they were when the Government took over control early in the revolution will require the expenditure of large sums for rolling stock, rails, machinery, buildings and supplies, for all of which the United States is the logical market. There are at present in service 649 oil burning locomotives and 296 coal burners. Most of these are of small to moderate size, and many are 15 to 20 years old. At least 200 locomotives are required to refit the system and enable it to handle the expected increase in traffic resulting from the recognition of the Obregon regime. Oil is the logical fuel for Mexican locomotives, because of the poor quality of the Mexican coal deposits and because of the short haul of oil from the Gulf.

Results of Revolution

The revolution took heavy toll of the system's rolling stock. Of the 15,000 freight cars of all classes listed in 1911, but 8760 are in good order today. The various revolutionary leaders used the railroads and cars for troop movements and barracks, and had no compunction in destroying rolling stock and right of way rather than surrender them to a rival. Orozco employed a track crane and locomotive to tear up 70 miles of the Mexican Central north of Chihuahua, piling the ties and rails into great heaps and firing them. For years the twisted rails, like "Jeff Davis' neckties," lay beside the new road. Villa burned hundreds of cars in his raids in Chihuahua, and the story was repeated, in greater or less degree, throughout the republic. The Mexican shops are now said to be building and repairing cars at the rate of 3000 per annum. At this rate, and allowing for repairs to cars now in service, three years would elapse before the pre-war figure would be reached. It is doubtful whether the terms of the agreement would permit such delay. Hence, orders abroad provide the only recourse.

The passenger service is in even worse state. Exclusive of Pullman and sleeping cars, the official report lists only 323 passenger, baggage and express cars in first class shape. These cars are more difficult for the local shops to construct and considerable orders should come to American manufacturers. There is a need for light-weight combination passenger and mail cars for the branch lines. Motor cars should also be of service in the short runs from the trunk roads, such as from Irapuato to Guanajuato, or Zacatecas to Guadalupe.

New Trackage Needed

To restore the trackage, probably not less than 3000 miles of new rails will be required, for both standard and narrow gage lines. A large quantity of cross ties will also be purchased. The railroad shops must have new machinery, and a large number of stations and warehouses must be built. It has been suggested that steel buildings of the Truscon or Bancroft type be used instead of adobe or stone structures wherever feasible. These buildings have given satisfactory service in other tropical countries and should withstand Mexican climates successfully. Other items of the rehabilitation include telegraph, telephone and barbed wire.

The privately owned railroads, such as the Mexico

*Engineer, 30 Church Street, New York.

Northwestern, which runs in a semi-circle from Juarez through Pearson, Madera and Miñaca to Chihuahua City, and the "Queen's Own," as the British-owned Mexican Railroad from Vera Cruz to Mexico City is known, suffered severely, but, as far as regards repairs, they are in a different category. The Mexican Railroad was operated for some years by the Mexican Government and returned early in 1920 to the British management. Only the blessing of a fearless operating staff prevented the Mexico Northwestern from being abandoned, so savage were the assaults upon the line and trains. The private railroads have large claims pending with the Claims Commission for damages and unpaid-for use of trains during the revolution. These claims, which are to be given precedence, will provide funds for the rehabilitation of the private lines.

Needs of Narrow Gage Railroads

Another, though smaller, market for equipment manufacturers lies in the numerous narrow gage railroads being repaired or constructed by the large mining companies. The sugar plantations in Morelos, which often contained up to 75 miles of narrow gage railroad per plantation, and which were looted during the Zapata troubles, are being re-equipped. At one time, 40,000 tons of junk from Morelos plantations was assembled in Mexico City for sale as scrap.

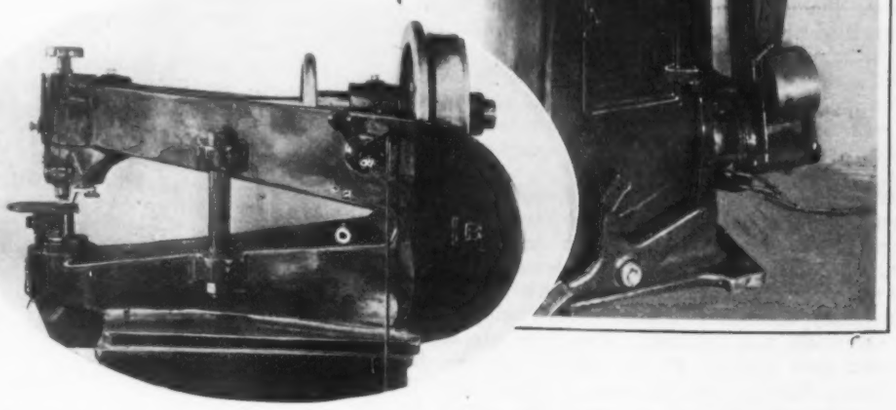
The agreement provides for the return of the railroad management to the corporation owning the lines. The Mexican Government owns or controls a majority of the stock and will have 12 of the 21 directors. The present operating heads have proved efficient, a fact easily shown by the improvements they have effected with the scanty funds at their disposal. It is doubtful, given the strong nationalistic temper of the Mexican people, and the Mexican control of the corporation, whether the reappearance of foreign managers would result satisfactorily. American bondholders and business men are interested primarily in the efficient operation of the lines, that traffic and earnings may be increased, that American trade with Mexico may be facilitated and the bondholders rewarded for their lean years, and the simplest way to this desired end would seem to be to confide the operation of the rehabilitated National lines to the Mexican executives who have brought the system from chaos to its present condition.

New Nibbling Machines

Two additional machines are now included in the line of nibbling machines being marketed by Andrew C. Campbell, Inc., Bridgeport, Conn. These machines were exhibited at the machine tool exhibition held recently at Yale University, and mentioned in THE IRON AGE report on that exhibition.

The principle of operation of these machines is somewhat on the order of a combination slotting and punching action. The first machine of the line was described in THE IRON AGE last year when the first tool appeared on the market. In this machine sheet stock of whatever material, including steel, brass, aluminum, bakelite, fiber, etc., may be quickly cut to desired outline of regular or irregular contour, through the use of lines scribed on the sheet, or the work may be guided by a template superimposed on it, the amount of feed being governed by a stop pin which is a part of the cutting tool or punch. The older machine is built with a capacity of 3/16-in. mild steel plate and 6-in. throat depth.

One of the new machines is known as No. 1-B and is essentially the same as the No. 1 or 6 in. machine, except that it has a throat depth of 24 in. It will cut a maximum of 3/16-in. stock and requires ½ hp. for that purpose.



The Nibbling Machine With Twelve-Inch Throat Is Shown at Right. This machine has a capacity for cutting up to ⅜ in. mild steel. It may be used for roughing-out automatic screw machine blanks, stripper plates, etc. The 24-in. throat machine shown in oval is suited for lighter stock up to ⅛ in. where a greater throat depth is required to accommodate wide sheets

The No. 2 machine, which is the second of the new sizes, will cut sheet up to ⅜ in. thickness, for which 1 hp. is required. This machine has a throat depth of 12 in. At the New Haven exhibition this machine was employed on demonstration roughing out Brown & Sharpe automatic screw machine cams. It produced a five-lobe cam from ⅜ in. stock, ready for filing and hardening, in 1 min. 50 sec. It was also used on making stripper plates. The machine is adaptable for production of a limited number of duplicate parts.

For these machines are claimed features of rapid action, quick adjustment, ease of operation, simplicity of parts and low upkeep of tools.

Machines may be furnished for belt drive or may be equipped for direct motor drive.

Specifications

	No. 1B	No. 2
Floor space	3 ft. 2 in. x 2 ft. 2 in.	2 ft. 9 in. x 1 ft. 7 in.
Height	4 ft. 7 in.	5 ft.
Pulley	12 in. x 2 in.	15 in. x 3 in.
Pulley speed, r.p.m.	450 to 500	300
Throat depth, in.	24	12
Horsepower required	½	1
Weight, lb.	770	950
Maximum capacity, mild steel, in.	3/16	⅜

Italian Meeting of Iron and Steel Institute

American Experience with Special Steels Resistant to Corrosion—The "Purer" the Steel the Better for Structural Purposes

(Special Correspondence)

[Continued from THE IRON AGE of Oct. 4. Owing to the pressure upon our columns last week, it was possible to give only the first day's proceedings of the Iron and Steel Institute meeting at Milan, Italy, Sept. 17-18.—EDITOR.]

MILAN, ITALY, Sept. 20.—The Iron and Steel Institute session of Tuesday morning, Sept. 18, was opened with a paper by Dr. W. H. Hatfield on "The Influence of Nickel and Chromium on the Solubility of Steel (in Relation to Corrosion)." Sir William Ellis took up the subject from an engineering point of view and intimated that the work of research was only in its beginnings. It was of the utmost importance to know how the effect of immersion in sea water and exposure to damp air would affect our great steel structures, on which enormous sums of money had to be spent annually by way of applying protecting coatings. If these coatings could be avoided by making a steel that did not need them, even a high priced steel would be possible of consideration. There was a danger in using laboratory figures, in that these were always too high, or exceptional cases which were difficult of regular reproduction on a works scale. Once, however, a long run of actual operation results become available the matter would be different.

Special Steels Resistant to Corrosion

Doctor Mathews, in discussing the paper, stated that the new steels were all right practically and had been developed and tried out sufficiently long to establish their availability in daily practice. They were being made of all kinds of compositions suited to special corrosion resistance needs, and in the United States the trade name Resistol was given the group his company was producing. These steels had been tried out in liquid air—in fact, were used for mechanism operating in this medium—and for conducting acid mine water, with perfect success. The Bureau of Mines had made many tests in this direction, and the iron alloys in question were no longer laboratory curiosities but actual articles of daily works production. It would be of interest to state that Faraday had proposed the use of these steels probably 100 years ago in connection with his search for permanent reflectors. When it comes to cutting these steels, the acetylene torch had to be improved to a great extent before this could be done, and even now it takes 10 to 15 times the effort to do the work as with the ordinary steels.

E. L. Dupuy had observed in high nickel steels a selective corrosion along the lines of separation of the crystals, with the result that a separation of the grains took place. This did not occur when chromium was added. The chromium assured homogeniety of the metal, besides stabilizing the constituents at low temperatures.

Dr. Ridsdale discussed the paper and asked if the Hatfield alloys are now used as resistance grids and heating units for operation with current.

Doctor Hatfield in reply enlarged on the general problem of steel structures. It was a fact that when experimenting with nitric acid on steels of 12 to 14 per cent chromium a remarkable resistance was obtained to corrosion. Even with 5 per cent chromium the resistance was noticable, showing the complexity of the problem. Were it not for the scarcity of chromium, the earth's crust having but 0.35 per cent, the use of chromium steels where corrosion has to be dealt with would not be prohibitive. In the United States copper has been tried along this line—some 0.10 to 0.20 per cent having been used. But copper has not the influence claimed for it. He held that in the final analysis it was a question of pure steel. The purer—that is free from phosphorus, inclusions, etc., the better the steel resisted corrosive influences. Still, that would naturally be the solution for the millions of tons of steel going into structures, while for the hundreds of tons of special work, the new steels could not be surpassed as we know them now. He looked forward to comparing records of English with American steels as the subject was developed further.

The president here read a cable from Sir Robert Hadfield regretting his enforced absence from the meeting and wishing it all success. A reply was ordered by the meeting.

The paper by Cesare Martelli and Toto Sotgia on "The Iron Ore Mines of Nurra (Sardinia)" was read by the secretary and not discussed. Then the paper by W. T. Griffiths on "The Change Points in Some Nickel-Chromium Steels" was read by the secretary, and discussed by M. Dupuy, who did not agree with the second conclusion of the author. In the studies he had made with the Charconard dilatometer on the heating and cooling curves of some chromium-nickel steels in connection with their mechanical properties he had found some differences in the critical points of the curves. Quenching cracks are liable to form, and there is danger in heating the steel too high before quenching.

The paper of E. D. Campbell, J. F. Ross and W. L. Fink on "The Relative Efficiency of Dry and Moist Hydrogen on the Decarburization of Steel at 950 deg. C. and the Effect of Hydrogen on the Phosphorus Content" was read by the secretary. The paper was not discussed.

The remaining papers were read by title. In closing up the sessions a vote of thanks was given the members of the executive and reception committees of Milan, as well as its Chamber of Commerce. The members of the institute and their ladies then proceeded in a body to the City Hall, where a wreath was placed upon the tomb of the unknown soldier. The delegation was received by the Mayor of Milan, with the usual felicitations and responses, and a collation was served.

Works Inspection and Pleasure Trips

In the afternoon the members were taken to visit the large works of the Breda Co. This great plant is essentially a producer of rolling stock. Cars, locomotives, steam and electric, are turned out on a large scale, also aeroplanes in considerable numbers, some being exhibited in action during the visit. One of the striking features of the plant is a great laboratory building, which in effect is a technical school in itself. The wisdom of experimental investigation by competent staffs is here seen very plainly. The ladies were taken to the International Exhibition of Decorative Art at the palace at Monza. Special cars were provided and this beautiful palace, presented to Italy by the King, was inspected and appreciated. In the evening the president of the institute gave a dinner in honor of the Italian metallurgists.

On Wednesday, Sept. 19, a special train conveyed the 180 institute members and their ladies to Lake Como, where a steamer took the party to Caddenabia, stopping at Bellagio on the way. The beautiful Italian lake was enjoyed to the utmost, and on arrival at the destination the party was conducted to the famous Villa Carlotta, where a superb dinner was tendered the party. The excursion was given by the Association

of Italian Metallurgical Industries, and the Italian Government gave the use of the villa for the entertainment—the first in its history for this kind of a reunion. The Villa Carlotta is famous as the Italian home of the Duke of Mecklenburg, and it was confiscated by Italy during the course of the war.

The party returned to Milan in the early evening, and made ready for an early start on an elaborate series of visits to Italian industrial cities, to last until Oct. 3. For this trip an endless round of courtesies had been arranged.

R. M.

FOR TRADE WITH RUSSIA

An American's Observations on Opportunities Now Open to This Country

Herman Saxon of the Allied-American Corporation, 165 Broadway, New York, who has just returned from a five months visit in Russia, sees improving opportunities for trade between the United States and Russia. He says there is still much misunderstanding of conditions in Russia among the people of other countries. The Russian, Mr. Saxon says, has settled down to work, there is no disorder, and while the country still is suffering sorely from the effects of the revolution, it is going ahead to reestablish its industries and agriculture. He believes Russia's ability to import from the United States is considerable, if American manufacturers are willing to make suitable credit arrangements. The Russian Government has the import situation well in hand. No goods can be imported except by Government license, and the licenses are limited to those articles which are regarded as immediate necessities in the rehabilitation of the country. Motor cars, for example, are on the prohibited list for one year, the result being that the limited number of automobiles in Russia are being bartered back and forth at ridiculously high prices.

Most of Russia's imports are now coming from Germany and England, the former country in particular having extended liberal credit. Cotton, tin, lead and other metals, hand tools, small and medium-sized farm implements, and actual necessities, as food and clothing, comprise the bulk of the imports. Russia needs a couple of good crops, Mr. Saxon says, before the country can extend its purchasing power into other channels.

While railroad equipment has deteriorated to a considerable extent, trains are running on all lines. In Petrograd life goes on much as before the war, except for the absence of some of the glitter. Theatres, the opera, street cars, shops, are proceeding along normal lines. The Russian Government is willing to offer concessions to foreign capital to develop oil wells, mining, steel manufacture, etc., and American capital and enterprise are particularly invited.

Mr. Saxon leaves New York this week on a tour to various manufacturing plants in the United States before returning to Russia. His company represents a number of American manufacturers there.

La Follette Coal and Iron Co.'s Improvements

The La Follette Coal & Iron Co., which operates three large coal mines, several iron mines and a blast furnace at La Follette, Tenn., is making a number of important improvements to its manufacturing facilities in the iron department. First is the installation of a pig casting machine of the Pittsburgh coal washer type. It will be a single strand machine but arranged for installing a second strand later. The single strand machine will handle 300 to 400 tons of iron per 24 hrs. The iron will be delivered to the casting machine in Pugh hot metal cars of 75-ton capacity. Special attention has also been given to the form of molds so as to produce pigs which can be easily piled in stock, readily broken and still not be too heavy for one man to handle.

The company is also building a number of concrete ore storage bins to replace old wooden bins. This reconstruction has been under way for a number of years and when the present new bins are completed the entire trestle and bin storage system will be of reinforced concrete, equipped with automatic doors, delivering coke, ore and limestone into charging cars on an outside ground level track instead of the tunnel. The improvement will reduce considerably the number of employees required for handling both raw materials and pig iron.

The La Follette Coal & Iron Co. began a general program of rehabilitation some six or seven years ago, starting with the electrification of the haulage system for the coal mines and the substitution of electric mining machinery for pick mining, followed by the complete re-building and enlargement of the blast furnace in 1921. Plans are under consideration for the installation of a by-product coke plant of sufficient size to take care of the present and anticipated needs of the company.

Stocks of Coal and Coke

WASHINGTON, Oct. 9.—The average stocks of bituminous coal at steel plants on Sept. 1 consisted of 33 days' supply as against 35 days on Aug. 1, while stocks at by-product coke plants consisted of 30 days, as compared with 27 days, according to a report issued by the Bureau of the Census and the Geological Survey. Of the steel works stocks, there were 28 days' supply of steam coal and 42 days' supply of gas coal on Sept. 1, while respective figures for by-product plants were 31 days and 29 days.

The report states that consumers of soft coal continue to add to their storage piles during August and on Sept. 1. They had on hand approximately 56,000,000 net tons, an increase of 4,000,000 tons over Aug. 1. Measured in terms of tons, stocks increased 7.7 per cent in August. Measured in terms of days' supply, the increase was 4.5 per cent. The smaller increase in days' supply is accounted for by the fact that the rate of coal consumption increased in August.

Cast-Iron Pipe Statistics for August

WASHINGTON, Oct. 8.—The Department of Commerce announces statistics on the production, orders, sales and shipments of cast-iron pipe for August, 1923. The report includes returns from 12 establishments and is confined to bell and spigot pressure pipe exclusively. The summary by total tonnage for each of the principal items of the industry is as follows:

	Tons
Cast-iron pipe produced during the month	84,588
Cast-iron pipe shipped during the mounth	84,843
Orders for cast-iron pipe specified to be shipped from stock	14,727
Orders for cast-iron pipe specified to be made on orders	165,518
Orders for cast-iron pipe not specified as to sizes	6,860

Pennsylvania Employment and Earnings

Information supplied by the State Department of Labor and Industry of Pennsylvania for August includes reports from 652 plants having 263,775 employees. The payroll for one week was $7,142,705, giving an average wage of $27.07 per week. Steel works and rolling mills included 42 plants, 47,605 employees, $1,363,898 payroll, and $28.65 average wage. Structural steel works shows the highest average wage of all with $46.04 per week. Glass workers with $40.55 are in second position. Automobile workers had an average wage of $26.20; car builders and repairers of $31.38, employees of foundries and machine shops of $32.47; blast furnace workers of $27.32 per week.

French Industrial Building Construction

Features in a French Automobile Plant Include Glass Roofs, Light Weight Trusses and Tile—Round Pole Framing During the War

BY H. M. LANE

ALL through France the method of building construction varies greatly from that generally found in the United States, and in most cases shows clearly that our French friends have been attempting to save small amounts of metal at the expense of a larger expenditure in fabrication labor than is the case in America.

Another interesting feature in their plants is the extensive use of glass roofs in areaways, connecting buildings, above loading platforms and in other similar locations. This is made possible on account of two conditions which do not exist in most of our country. Both the snow and the wind loads encountered are much less than here. In Paris the temperature is so mild that there is practically never ice enough on the Seine to impede navigation, and they do not have such violent windstorms as we do.

Fig. 1, a glass-covered court between two buildings in the plant of Andre Citroen, illustrates a general type used in many French factories, and particularly in Mr. Citroen's automobile factories. It will be noted that the roof truss is of very light construction, and that there are longitudinal braces made of light lattice trusses. The sheets of glass in the roof itself are considerably over two meters (6½ ft.) in length, but the glass is not wire glass, and in fact wire glass is not extensively used in France.

Fig. 2 shows a loading platform covered with a glass

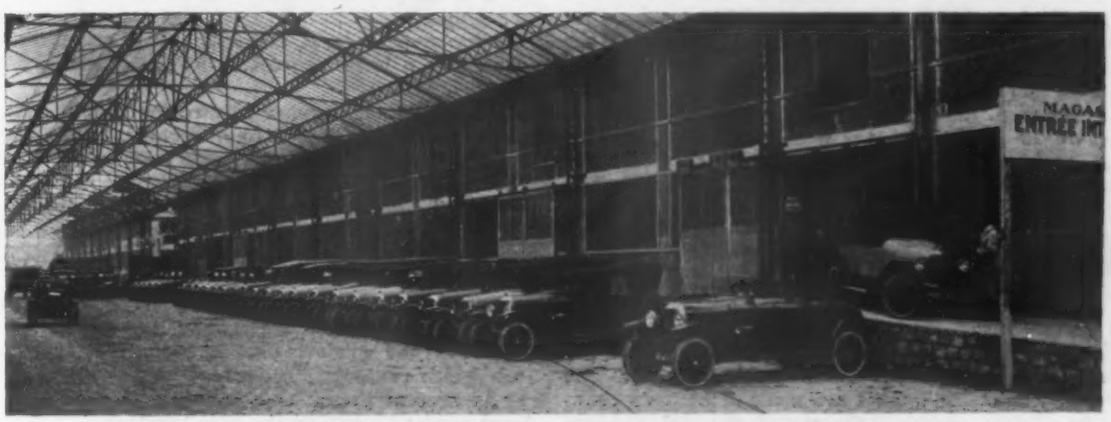


Fig. 1—Glass Roof Court Between Two Buildings. The very light trusses which support this roof, being typical European design, are of considerable interest to American engineers

Fig. 2—Glass Marquise Over Loading Platform. The trusses supporting this roof are typical of ornamental trusses extensively used throughout France, the lower chords of the trusses adjacent to the columns being in the form of arches

Fig. 3—Typical French Saw-Tooth Building. Three adjacent saw-tooth sections of this roof are framed as one truss, and there is a compression member that extends across above the points of the saw tooth

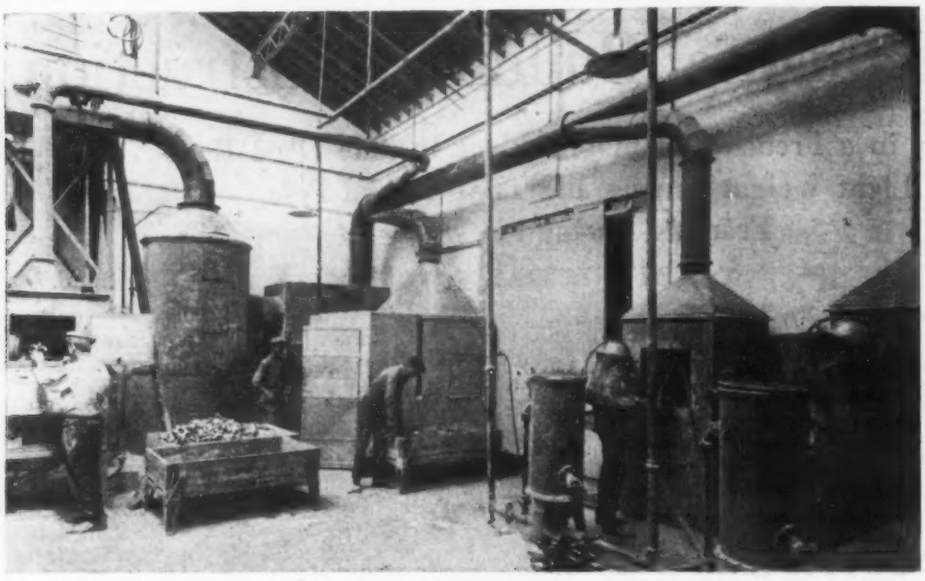


Fig. 4—Sand-Blast Equipment in Heat-Treating Department. Above these machines can be seen a typical French tile roof supported on wooden rafters, with very light wood strips for purlins

roof marquise. This extends out over the main portion of the bodies of the trucks being loaded, and protects the loading operation from the weather. In this case, also, the lightness of the structural steel members is noticeable, but this truss is markedly different from that shown in Fig. 1 on account of the fact that at the column the lower chord of the truss takes the form of an arch, and this is true in many French buildings.

In the right foreground of this view is one of the standard 10-hp. Citroen cars with a caterpillar attachment, such as was used on the cars that crossed the Sahara desert last winter. In the left foreground is one of the 5-hp. cars under test. Around between the buildings is a runway used for testing all of the 5-hp. cars as they are turned out.

Many of the buildings have saw-tooth roofs and there is ample light, which usually is arranged to face the north. Fig. 3 shows, in a portion of the assembly department of the plant, in which the 5-hp. motors are assembled, a considerably different type of roof. The lower chords of the trusses are made of built-up channels or girders, and over the top of the roof are carried top chord members of the truss, so that three saw-tooth bays are spanned by one truss. The roof itself in this case is made of light concrete arches thrown between channels, and this in turn is covered with a standard French tile roof.

Particular attention is called to the height of the plant, and to the remarkably light and airy appearance of the entire structure. This is true of all of the buildings of this organization, and particularly so of the newer buildings. Some of the old buildings which were taken over from previous organizations naturally do not comply with Mr. Citroen's desires so completely as those which have been built under his direct management.

Fig. 4 shows a corner of a sand blast room in connection with the heat-treating department, and in the upper central portion of this can be seen the under side of a typical French tile roof. In this case light steel trusses at approximately 20-ft. centers support light longitudinal lattice members, which in turn carry wooden rafters a little smaller than our 2 x 4's. These in turn carry wooden strips upon which the clay tiles are supported. The individual tiles are not very heavy and this makes a light, substantial roof structure which is used on a large proportion of the French manufacturing buildings.

Fig. 5, another typical illustration in one of the assembly units of the Citroen factory, shows another method of illumination commonly used in these plants. The upper third of the roof is a glass skylight supported on light steel trusses. This illustration shows also the light lattice columns in use, though in this particular plant the columns are much heavier than usual on account of the fact that this building was arranged to carry light traveling cranes if necessary. At the far end of the right-hand bay can be seen the typical arched windows used in the gables of all buildings which run out to the street.

At present progressive assembly is used to a very large extent in putting the cars together, but they now have plans for progressive assembly conveyors, which are being designed by the Palmer Bee Co., Detroit, and progressive enameling ovens, designed by Young Brothers, Detroit. The European markets demand a much wider variety of bodies than do the American markets; this necessitates having on the floor at any given time a large number of body types, as will readily be seen in this illustration.

An article of this kind would not be complete without saying something about the war-time buildings. During the war structural steel could not be had, and yet it was necessary to put up many large manufacturing plants and to put them up quickly. Some French engineers solved the problem in a truly characteristic manner. The buildings were fabricated entirely with round poles just as they came from the tree, the poles simply having the bark removed from them.

Fig. 6 shows a typical interior of one of these build-

Fig. 5—Assembly Department of Automobile Factory. Particular attention is called to the height of this plant, and the amount of light afforded by the central skylight, and also to the arch windows in the end of the building facing the street

Fig. 6—Building with Roof Trusses Framed from Round Poles. During the war it was impossible to get steel and hence a great many buildings were put up in France, the frames of which were constructed entirely from round poles, which were fastened together with bolts, drift pins, and sheet metal strips

ings with its round pole roof trusses. It will be noted that the vertical members in the center of the trusses have been carried 2 or 3 ft. below the lower chord line, so as to afford a joint into which the diagonal longitudinal members which support the ridge could be framed. All of these diagonal braces were held in place by drift bolts or spikes, and, in addition, were joined by sheet metal pieces which were stamped or formed into the approximate shape of the face of the timbers they were to join, and then were hammered into place and nailed to the timbers. The result is a very substantial structure, and these buildings should, in the natural course of events, have a remarkably long life.

WILL NEED MACHINE TOOLS

Probable Requirements of Japan—Narrow Escape from Recent Earthquake

Arthur Jackson, representative of the Potter & Johnston Machine Co., Pawtucket, R. I., was in Japan at the time of the great earthquake. He has arrived in Seattle and in a letter to THE IRON AGE says Japan will need all kinds of machine tools. He gives the following account of his experiences:

"I shall be greatly obliged if you will kindly report in THE IRON AGE the safety of both wife and myself, after going through the Japan earthquake. Jay W. Myers of the National Acme Co. is also safe. I met him on the President Jefferson two days afterward; he was uninjured.

"At the time of the earthquake, I was in our agent's office, the Yamatake Co. of Tokio. The building did not fall but nearly all the buildings around did and the fires started immediately; so it is very doubtful if it is saved.

"I helped in rescue work for two hours and then started to walk to my home in Yokohama. I passed the office of Andrews & George, which was still standing, but the fires were creeping toward it. I passed the following engineering works which were down or on fire: Shibaura Engineering Works, Oki Denki, Nippon Electric Co., all of Tokio; Tokio Gas & Electric Co. of Omori; Niigata Iron Works of Kamata; Nipponophone Co., Tokio Electric Co., and the Kanagafugi Mill, all of Kawasaki; Asano Dockyard of Tsurumi, Yokohama Dockyard and every factory in Yokohama. The Yokosuka Naval Arsenal is also entirely destroyed. There were large oil tanks on the hills above the town of Yokosuka, all of which caught fire and sent streams of fire into the town and dockyard.

"The loss of life is enormous, as many were caught in the factories or in homes and there was no chance of escape. Thousands got caught in the rivers of burning oil that came from the oil stores of the large oil companies. I had many narrow escapes from falling buildings or of being roasted alive, but I managed to get through it all and found my wife safe, except for a few bruises, in a field near what was left of our house, at 3 o'clock the next morning.

"We walked through the ruins of Yokohama the next day to the shore, where we were picked up by a boat from the Steel Navigator. We stayed on her decks all that night and transferred to the President Jefferson the next day. We were much pleased to meet Mr. and Mrs. R. Kimbara aboard her, both unhurt. Mr. Kimbara is a partner of the Yamatake Co. We lost all our personal possessions, except some underwear, a jacket and a safety razor that I managed to get from the ruins of our home. The clothes that I was wearing were ruined by oil, fire and water.

"Japan will be in the market for every type of machine tool, especially if it is decided to build up the devasted area. It is very doubtful if Yokohama will ever be rebuilt again. It seems as though the factories of Osaka, Kobe and Kyoto will have a very busy time ahead of them, as they are out of the earthquake zone."

Australian Plant Will Need Equipment

WASHINGTON, Oct. 8.—The State Government of Australia has authorized the Chief Commissioner of Railways to replace the present railroad work shops at Islington with an entirely new and modernly equipped plant, says a report received by the Industrial Machinery Division, Department of Commerce from Consul Henry H. Balch, Adelaide, Australia. The buildings and the equipment, according to official estimates, will cost not less than £200,000 sterling. The work will begin at an early date. Some idea of the importance of the shops is obtained from the fact that there are about 2350 miles of railroad lines on which about 500 locomotives are run.

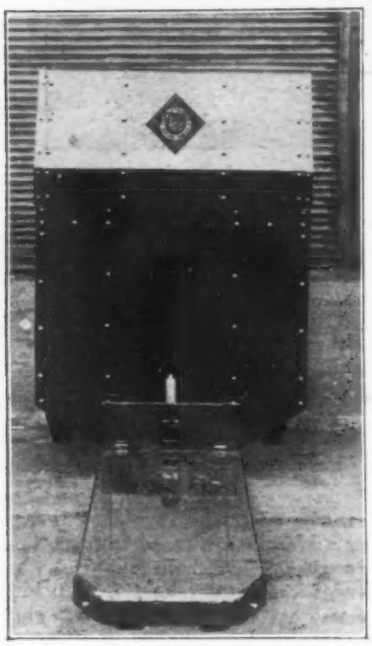
The plant is to be equipped with modern machinery such as any up-to-date railroad shops require, and most of the equipment will have to be imported. The equipment will consist of wheel lathes, ordinary lathes, drills, drill presses, shapers, planers, boring machines, cranes, etc.

"Anti-Friction Bearings in the Steel Mill" is the title of a paper read before the Association of Iron and Steel Electrical Engineers by A. M. MacCutcheon, chief engineer Reliance Electric & Engineering Co., Cleveland. This paper, together with the discussion upon it, has been reprinted by the Reliance company in a pamphlet of 52 pages, which is available for distribution on application to the company. The paper is of general interest and value to users and designers of machinery and power equipment, not only in the steel industry but in other industries.

Low Type of Electric Lift Truck

The Elwell-Parker Electric Co., Cleveland, has brought out a new low type of electric lift truck which has been designed particularly for handling the same load platforms that are used in connection with the hand life type trucks which elevate the load by pushing down the handle. This truck has been developed especially for plants using large numbers of platforms on which material is placed while going through the manufacturing processes or while in storage.

The truck has a riveted steel frame and its motor drives 22 by 3½-in. rubber-tired wheels through a worm reduction running in oil. The frame is suspended on springs over this drive axle. A compartment located directly above the driving axle houses an electric storage battery of either alkaline or lead type. This battery is of sufficient capacity to operate the truck continuously an entire day. It is stated that the motor will drive the loaded truck up a 10 per cent incline or a grade that cannot be made with a hand lift truck. The axle beneath the truck platform is equipped with 5¾ by 4-in. wheels and the top of the movable platform is built of ¼-in. steel plate, 18 in. wide and 46 in. long. This platform clears the floor 6¼ in. when in its lowered position and 9¾ in. when elevated, providing a 3½-in. lift.



New Low Platform Truck. Flexibility is a feature

The truck platform is supported on three heavy steel links, pivoted on the truck frame. Each link has a pressure greased renewable bushing to assure easy action and low upkeep. The platform is raised or lowered by rocking and lifting simultaneously. In other words, the loaded platform is moved slightly toward the operator when being raised and clears any obstruction located beyond the load which might interfere with the elevation of the load. The load is lifted by means of an arm or screw ram attached to the rear of this rocking platform between two of the supporting links. The other end of the ram is drawn into a threaded nut which is the hub of a bronze worm wheel which in turn is driven by a steel worm directly splined onto the armature shaft of a second motor which receives power from the battery.

To pick up a loaded platform the operator drives the narrow platform of his truck beneath it, closes a switch and the motor actuates the mechanism which lifts the load in ten seconds, stopping automatically when it has reached full height. The platform may be stopped manually at any intermediate point. After reaching its destination the load is electrically lowered.

Flexibility is a feature of the truck which can be operated through aisles that have been laid out for hand lift trucks. All four wheels are steerable. The truck can carry a load and at the same time haul a loaded lift truck as a trailer. The truck's capacity is 4000 lb. and its speed loaded, 300 to 400 ft. per min.

The fall convention and annual meeting of the Ohio State Foundrymen's Association will be held in Toledo, Ohio, Nov. 15 and 16. A program of unusual interest is being prepared and details will be announced at a later date.

Mechanical Engineers to Meet in Chattanooga

Oct. 23 and 24 have been selected for the fall regional meeting of the American Society of Mechanical Engineers at the Hotel Patten, Chattanooga, Tenn., when the power development of the South will form an important part of the program. Practical applications of welding will be featured, while the session of Oct. 24 will be devoted to management problems. Senator Newell Sanders will preside at each of the three technical sessions. The program follows:

Tuesday Morning, Oct. 23, Session on Welding

"Welding in Locomotive Repair Shops," by Fred E. Rogers, Davis-Bournonville Co., Jersey City.

"Welding Pressure Vessels and Pipe Lines," by S. W. Miller, Rochester, N. Y., Welding Works.

"Arc Welding," by Richard D. Reed, H. B. Smith Co., Westfield, Mass.

Motion Picture: "Oxygen the Wonder Worker."

Afternoon: Excursion to Hales Bar Steam Power Plant.

Evening, Session on Power and Fuel

Address by President John Lyle Harrington.

"Power Development of the Southern Appalachian Slope," by John A. Switzer and W. R. Woolrich, both of University of Tennessee, Knoxville.

"Use of Pulverized Fuel as Applied to the Open-Hearth Furnace in Small Plants," by R. H. Lowndes.

Wednesday Morning, Oct. 24, Session on Management

"Methods of Measuring Management," by Joseph W. Roe, New York University.

"Computation of Ratios for the Measurement of Management," by D. W. Knowles.

Discussion of Principles Governing Location and Size of Industrial Plants.

Afternoon: Excursion to Crane Co. enamelware plant and points of scenic interest.

Lake Superior Iron Ore Shipments in September

Shipments of iron ore from Lake Superior in September were 9,095,981 gross tons as compared with 6,801,299 tons in September, 1922. This is an increase of 2,294,682 tons or 33.74 per cent. The season's shipments to Oct. 1, this year, have been 45,988,845 tons as compared with 33,111,238 tons to Oct. 1, 1922, an increase of 12,877,607 tons or 38.89 per cent. The following table gives the September and season shipments by ports and the corresponding figures for 1922 in gross tons:

	September		To Sept. 1	
	1923	1922	1923	1922
Escanaba	569,060	820,520	4,564,527	3,325,625
Marquette	342,643	311,758	2,120,986	1,625,903
Ashland	1,050,443	928,712	5,199,694	4,642,345
Superior	2,744,199	1,781,670	13,751,785	8,484,713
Duluth	3,486,943	2,159,754	15,310,275	10,183,478
Two Harbors..	902,693	798,885	5,041,578	4,849,174
Total	9,095,981	6,801,299	45,988,845	33,111,238
Increase	2,294,682	2,888,177	12,877,607	14,450,044

The Duluth proportion this year to Oct. 1 of 33.29 per cent is larger than a year ago when it was 30.76 per cent of the total. The Great Northern dock at Superior is credited with 26.42 per cent of the total shipments this year against 22.96 per cent last year.

Natural Gas in 1919-1921

A pamphlet, by R. S. McBride and E. G. Sievers, that is a portion of the publication of "Mineral Resources of the United States," has been issued by the Geological Survey. It is pointed out that more than 2,600,000 domestic consumers and about 21,000 industrial or commercial consumers use natural gas for fuel. About $175,000,000 of natural gas was used in 1921, compared with $250,000,000 in manufactured gas. The unit price of the latter is much higher and its heating value per cubic foot much lower than with natural gas.

Production of natural gas is reported at 798,823 million cu. ft. in 1919; 860,540 in 1920, and 724,052 in 1921. The average price at which this gas was sold increased during the three years from 21.6c. per M. cu. ft. to 24.6c. and 26.4c. Prices of manufactured gas have been between 90c. and $1 continuously, except for a dip in 1916 and 1917 to a minimum of 87c.

Electric Transportation in Steel Mills

Considerations of Cost of Installation, Operation and Maintenance—Why Third Rail Is Better Than Overhead Wires —Comparison with Steam Locomotives

BY F. O. SCHNURE*

YARD transportation within a steel plant probably represents the largest variety, if not the most severe work, of any industrial haulage. Yard electrification as a factor in bringing lower haulage costs should be of prime interest to the steel industry.

Present steam practice, and electric in other fields, indicate that two sizes of locomotive are required for steel plant service and that these should average about 40 and 80 tons per unit. This classification makes it simple to standardize on the 40-ton unit, the control on which should be so arranged that two such units could be operated in multiple by one man on the heavier service. Since the maximum operating speed does not exceed 12 to 15 miles an hour, it is a question whether it would be necessary to consider the more expensive double truck or articulated unit, although it is felt that this type may present certain advantages on service where sharp and irregular curves abound. Forty-ton units, equipped with four railroad type motors, when operated in multiple, would draw proportionally less power from the distribution system than large, high-speed single unit locomotives, and would therefore mean considerable saving in feeder and station capacity.

In a plant employing 25 steam locomotives, ranging from 50 to 75 tons capacity, it is altogether likely that 20 electrical units would perform the same work.

Reasons for Third Rail

The third rail lends itself more readily to steel plant yard electrification than an overhead trolley for two reasons: First, it does not interfere with the work of locomotive cranes; second, it is better able to handle the heavy operation at low voltage. There are two kinds of third rail systems, one the top contact and the other the bottom contact system. For yard work, where switchmen and plant employees may not be denied free and safe passage over all portions of the yard, the bottom contact system is preferable.

The third rail should be built as low and close to the track as possible and be covered with impregnable wood or other insulator, so that its bottom and about ¾-in. of its lower vertical surfaces are exposed. Placing it low makes it easy to step across and, with the insulated cover, it can be stepped on without danger. Locating it as close to the track as clearances of the rolling equipment will permit, makes it easier for the contact equipment to cross switches and crossings and enter buildings.

Costs the Deciding Factor

In the steel plant there is small possibility of increased traffic on existing tracks, so that electric transportation must show its advantages over steam in lower fuel, operating and maintenance costs. The Maryland plant of the Bethlehem Steel Co. having fundamentally adopted electric drives in its mills for both the main rolls and auxiliaries, because of convenience, reliability and easy maintenance, and having had good results from third-rail transfer car operations on blast furnace trestle and motor car operation at the coke ovens, has been anxious to demonstrate the third rail for yard service.

Accordingly 1900 feet of under-hung bottom contact third rail was placed in service May 31. This is a 250-volt straight electric installation, current being supplied through automatic reclosing circuit breakers from the existing power system. The installation of the third rail cost $2 per running foot, distributed as follows:

Rail	17 per cent
Insulators	12 per cent
Guard	10 per cent
Brackets	5 per cent
Bonds	5 per cent
Miscellaneous bolts, wire, etc.	11 per cent
Labor	40 per cent

Operating Results

Three months' operation of our third rail on hot metal work has resulted in only two failures—one from the derailment of a truck which required repairs to both track and third rail, and the other from grounding of a rail insulator by hot metal spillage. From the results obtained so far, it would appear that the adoption of a third rail over the entire plant would be satisfactory, with possibly the addition of cable reels for use on open-hearth charging floors and shops when the physical location of the rail might be objectionable.

The locomotive used on this installation is a home-made rigid frame motor car to which two 75-hp. (½ hr. rating) back-geared mill type motors have been adapted. Similar units are in service handling the receiving car at the coke batteries. This unit weighs about 20 tons and has an estimated draw bar pull of about 8000 lb. It will handle two 100,000-lb. loaded ladle cars or four 65,000-lb. empty ladle cars at a speed of 12 to 15 miles per hour.

The labor required for its operation consists of one operator and a switchman, both being open-hearth employees. During June, 6864 tons of hot metal were handled, requiring 380 round trips, making a total mileage of 274. The average trailing load—metal, ladle and car—was approximately 50 tons and the locomotive and safety car about 34 tons. The power consumed was 3600 kwhr.

Comparison of Fuel Usage

Some time ago, tests of several days duration on a few of our steam locomotives, covering each class of service, such as hot metal, furnace stock, in and outgoing freight, mill and shop service, have given us data that allows comparison with electrically operated units of the same size in other yards. By basing this comparison on the amount of coal required per trailing ton mile, allowing 2 lb. of coal per kwhr. for the electric units, we obtain a fuel ratio of 18 per cent with steam locomotives, with no allowance for banking fires. The average trailing ton miles, which is the weight in tons of the loaded train excluding the locomotive and tender, times the miles traveled, was practically the same per day for both.

Our motor car operation showed a fuel ratio of 43.6 per cent on the same basis as the other comparison. This does not show up so well as might be expected, due doubtless to several factors, inefficient gearing, being worked continuously on curves, pushing the loaded ladle up a slight grade, car trucks not in first class condition, presenting two or three times the rolling friction usually encountered in railroad work and more idle movement than was observed. The greatest saving, which is not brought out in the fuel ratio, is the entire absence of standby losses in maintaining a steam pressure to serve the open-hearth as the steel was required.

Storage battery locomotives, which have proved so satisfactory on light and intermittent service, are now receiving some consideration in the steel plant yard.

*Electrical engineer Bethlehem Steel Co., Sparrows Point, Md. This is abstract of a paper read before the Buffalo convention of the Association of Iron and Steel Electrical Engineers.

High battery depreciation, covered by a guaranteed life with low replacement costs and spare batteries to allow continuous operation, may make this unit a valuable adjunct to the third rail operation, if not closely paralleling it.

Steel plants, with so much available fuel in the form of blast furnace gas, that may be transformed into cheap power, should not hesitate to explore the possibilities in yard electrification. Steel mill electrical engineers should be looking forward to the day when the only boiler stacks belching smoke will be those attending the power station.

Discussion

In answering questions regarding details of the electric transportation system for steel mills, Mr. Schnure pointed out that the brackets (⅜ in. x 8 in. sheet bar) carrying the third rail in the Sparrows Point plant are so heavy that there has been no trouble from falling objects. Guards are fitted at appropriate places to shed minor slopping of hot metal, but it is impossible to make provision against a heavy spill, as also against derailments or other wrecks. In any such case, the rails have to be replaced anyway and the third rail goes along with the job. Circuit breakers and other line protection avoid trouble from short circuits.

Units using gasoline engines and direct connected motors for propulsion are not heavy enough for the service. The third rail system was installed in preference to overhead lines, because of the necessity to use locomotive cranes in the plant, these being particularly destructive of overhead work. Gaps in the third rail are taken care of by an idler car, which would be used for hot metal service anyway, and which serves the purpose of giving contacts 40 ft. apart, thus spanning the space.

The third rail consists of 3 in. billets which had been discarded because of off analysis or for other reasons, insulated with bakelite from ¼ to 5/16 in. thick and covered with wood fenders. In entering the open-hearth department, where third rails along the floor would be impossible, a cable reel operating automatically is being considered. This would take up or let out cable upon connection being made at the entrance to the building.

THE IMMIGRATION PROBLEM

President Biggert Advocates Adoption of More Liberal Plan

Observations of F. C. Biggert, Jr., president United Engineering & Foundry Co., Pittsburgh, made from time to time to employees of the company through the company's house publication are usually interesting, sound and constructive. It will be recalled that Mr. Biggert was among the first to detect danger in the furious pace of general business during the fore part of this year and to sound a warning. He now makes some interesting suggestions on the subject of our immigration laws. While he would not open wide the door of entry to the country, he points out the restrictions imposed by the law of 1921 were altogether too drastic and would go back to near the pre-war average as the basis upon which to fix the number admitted. Mr. Biggert condemns unrestricted immigration as the idea of unthinking employers desiring abundant and cheap labor. He says in part:

"Immigration is a matter of importance to all of us because it has a very great effect upon the increase in number and the character of our people. Just now it is of particular importance because our next Congress must pass a new immigration law to replace the present one, which expires in 1924.

"The importance of immigration in this country will be evident from the fact that from 1900 to 1915 we averaged about 1,000,000 immigrants each year. Before 1907 no record was kept of those going out, but from that time until 1915 about 300,000 went out each year, and if we assume the same number as going out from 1900 to 1907, we have had remaining each year about 700,000 as an increase in population due to immigration. In these years we gained about 10,000,000 people by immigration or something over one-third of the whole increase in our population during these years.

"The great war changed the whole trend of immigration and during the years of 1915 to 1920 we gained about 150,000 per year from this source. If the war had not stopped immigration, we should probably have had 3,000,000 more people in this country than we did have in 1920. At the close of the war, there was great fear that a deluge of people would come here because of the distressing conditions in Europe. A law was hurriedly passed which has held down immigration so that only 270,000 have been gained each year from 1920 to 1923. In these years we gained 810,000 or about 1,000,000 less than under the pre-war rate. As a result of the war and after-war conditions, we are therefore short at least 4,000,000 people.

"This act was originally passed for only one year, but when it was about to expire in 1922 it was extended to 1924; hence, the next Congress must take some action on immigration and the general opinion is that this should be more than a mere extension of the per centum act.

"What Congress does regarding immigration will be greatly influenced by public opinion and it therefore behoves us to think about the question and in our own minds form a reasonable opinion.

"We can promptly decide that too much immigration is bad. Just *how much* is *too much* is hard to say, but I think a great majority would be in favor of letting in less than we received in the late pre-war years.

"Suppose we say that 800,000 may come in each year. That will be less than we have been accustomed to receive and yet not so much less as to disturb our balance. It represents roughly 8-10 of 1 per cent of our present population whereas we have been receiving around 1 per cent. But if we hold to the 800,000 for 20 years, our population will have increased so that it may represent only 6-10 of 1 per cent of our then population and so on. A law framed along these lines would give us the immigration we now need, prevent a deluge at any time and gradually accustom the country to get on with a decreasing proportion of immigration to population.

"Of course, there should be provisions in the law to keep out undesirables and some scheme should be worked out to induce people of the most desirable types to come in. This selection of types also should gradually take effect so as not to prevent our admitting substantially all of the 800,000 we believe we now need. Just how this can best be done could only be decided after a deep study of the situation, but the idea would be to let in the whole 800,000 the first year regardless of nationality and gradually shift to an allotment basis favorable to the desired nations.

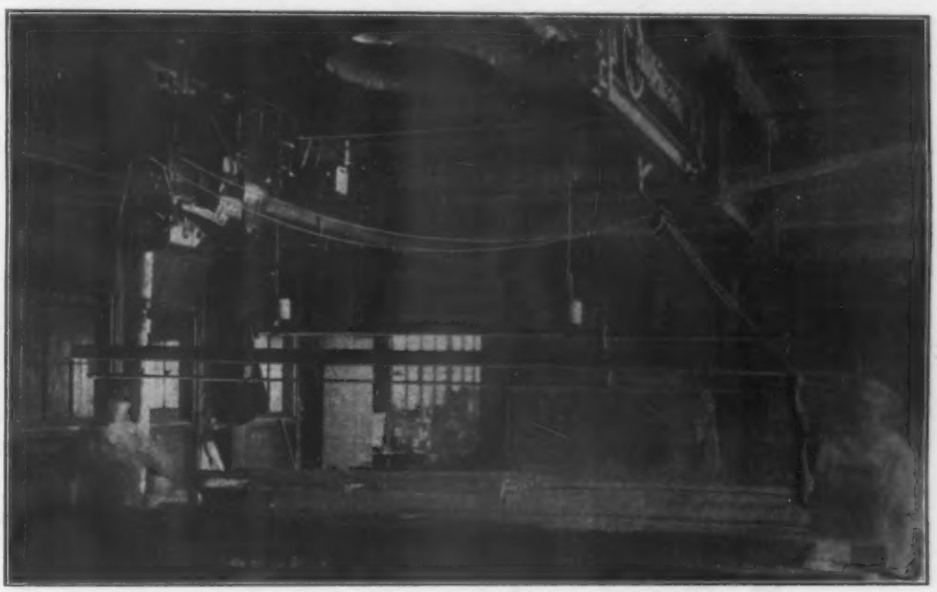
"You may disagree with my figure of 800,000. If so, set your own figure, only do not set it too low. I believe we can properly absorb and Americanize 800,000 well-selected foreigners a year and, if we can, we should.

"This country has always been a haven of hope and safety to the oppressed and crowded peoples of other lands. Never until the per centum limitation act of 1921 has that door of safety been so nearly closed. If we open it too widely, we run the risk of destroying all our advantages as a haven. To close it more than is necessary is contrary to the basic ideas upon which our Government was formed."

Crane Saves Labor in Plating Shop

A labor-saving adaptation of a hand propelled crane equipped with electric hoist, in the plating department of a large manufacturing plant, is shown in the accompanying illustration. A feature of this crane is that it was built to be operated by a girl and was especially designed for ease in operation and with control safety devices, making it foolproof.

The crane is used for handling bundles of material on a rack to and from several plating tanks over which the crane runway is located. It is pushed along its runway by hand and the rack with its load is lifted in and out of the tanks with the electric hoist. The crane has a 14-ft. span and is equipped with a 1-ton hoist. It is operated by the girl shown at the right, being pushed along its runway by a strap iron handle that extends down from the crane frame. Because of the ease of operation little muscular effort is required in pushing the crane along its runway by the handle with its load of approximately 1000 lb. Control of the hoist is through the ropes extending down at the side of the crane-operating handle, the control being centered at the one point within easy reach of the operator. The hoist has the usual hoisting limit switch and is also equipped with a spring bumper and a bell which rings when the hook approaches the safe limit of travel. The crane runs on Hyatt roller bearings.



Labor Saving Adaptation of Crane in Plating Work. It is pushed along the runway by hand and the loaded racks lifted in and out of the tanks by the electric hoist. Ease of control is a feature

Before this crane was installed the work was handled by two girls with two hand-operated trolleys, one at each end of the rack. This method of handling required considerable muscular effort and was very fatiguing to the operators. With the equipment illustrated one girl does the work formerly done by two and with much less exertion. In addition, the load on the rack has been increased 25 per cent or to as much material as the rack will hold.

The crane and hoist were designed and built by the Stamp Electric Hoist Co., Cleveland.

Oil Burner Manufacturers Form Association

The American Association of Oil Burner Manufacturers, a national organization of both home and industrial oil burner manufacturers, was recently formed in Chicago. Broadcasting accurate data concerning oil burning and the oil burner industry is one of the association's principal aims. Wallace C. Capen, Home Appliance Corporation, St. Louis, was elected president, and Leod D. Becker, editor of *Fuel Oil for Heat and Power*, Galesburg, Ill., was made acting secretary. Temporary headquarters will be maintained at 518 Bank of Galesburg Building, Galesburg, Ill., and Room 605, 20 East Jackson Boulevard, Chicago. The association will gladly answer inquiries from interested individuals or firms concerning all kinds of oil burning.

Executives' Relations with Employees

"Workmen do not want to help manage. They think, and rightly, that of such is the boss's job. But they do want a chance to kick—to feel that they are persons of importance."

This statement sums up, in a degree, the philosophy of George H. Charls, vice-president and general manager of the United Alloy Steel Corporation, Canton, Ohio, as regards relations between employer and employee, particularly in a large industry. Mr. Charls' views, which are based on many years' experience in the handling of men, are interestingly told in an article under his name in the October number of *System*.

Some of Mr. Charls' views may be briefly summarized in these excerpts from his article:

"If the chief executive does not succeed in selling himself to his organization, the organization will break him. If the organization is not sold to the workers, the workers will break the company.

"The chief difference between a workman and an executive is that the executive cares more for holding his job. Too much of the glad-hand induces distrust—workmen do not like to be fawned on. What they want is what we all want—upstanding fairness.

"Keeping the way open from the work bench to the front office is one of the biggest jobs of the leader. And, as a matter of fact, it takes but little time, for it is the principle of having access to the head that counts. The actual access is not often taken advantage of.

"I am afraid of complete methods and unfailing panaceas for labor troubles. * * * Perhaps some day a man will come along with a solution—but I shall not be the first to accept him. I shall find out what he has to say—what he can teach."

Foreign Commerce Hand Book

Issued by the Chamber of Commerce of the United States, a 40-page pamphlet under the above title gives information of various sorts regarding matters of interest to export and import organizations. The handbook is intended to serve as an indication of sources of export and import service in the United States, and the activities of the advisory committee of the Chamber. The effort has been made to give a straightforward indication of the best sources on all topics covered, which include procedure, statistics, bills of lading, insurance, consular service, foreign corporation laws, tariffs, and a wide variety of other matters.

The Gilbert & Barker Co., West Springfield, Mass., gasoline tanks, has made a substantial cut in its working forces and has abolished the night shift. The plant will close at noon on Saturdays, making a five and one-half day week.

Electric Heating of Finishing Rolls

Device for Ridding Sheet and Tin Plate Mills of Roll Breakage, Due to Uneven Expansion—Greater Uniformity Obtained in Sheet Thickness

BY GORDON FOX*

FINISHING rolls of practically all sheet and tin plate mills are made of cast iron. That the working surface of the rolls may have sufficient wearing qualities, this portion is cast in an iron mold, which causes the molten metal adjacent thereto to solidify quickly. The carbon in this rapidly cooled iron remains in its combined state. The chilled portion of the roll has a white crystalline structure and is very hard and brittle. The clear chill ordinarily has a depth of about ½ in. to 1 in. and tapers off gradually. The entire center portion of the roll, including the necks and wobblers, is gray iron, which has been cooled sufficiently slowly to permit the carbon to assume graphite form.

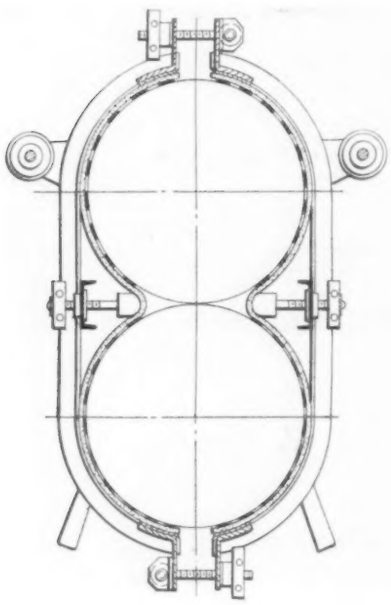
This composite structure is primarily responsible for troubles due to roll breakage. The chilled outer portion of the roll has an expansion rate about twice as great as the inner gray iron portion. Thus, dimension *A*, Fig. 1, tends to expand twice as rapidly as dimension *B*. This may cause shearing stress along some such line as *C*, compression along the line *A* and tension along the line *B*. Similar forces occur in an axial direction. Also, due to the more rapid expansion, the chilled portion tends to pull away from the central portion of the roll, setting up radial tension forces.

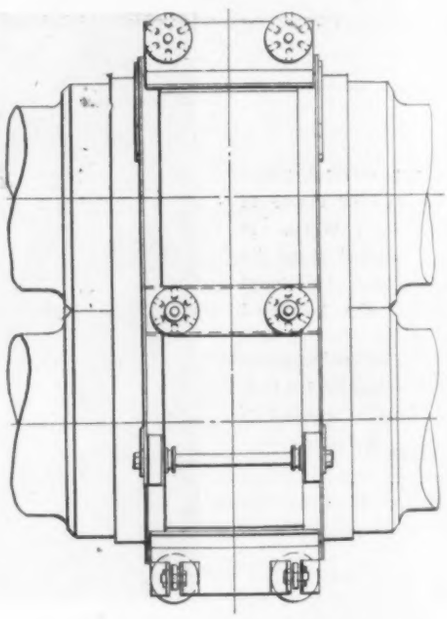
These conditions would exist even if the roll were uniformly heated. They are decidedly aggravated by the fact that the rolls are heated from the outside and the external portions reach fairly high temperatures before the interior is perceptibly heated. The combination of materials having different rates of expansion, heated at different rates and to different degrees, particularly in view of the hard and brittle nature of the chilled metal subjected to stress, renders care in the treatment of rolls highly desirable.

These finishing rolls are operated dry and hot; the cooling of the pack is thus minimized. As the hot pack is in contact with the central portion of the rolls the heat enters the rolls at this point. The ends and necks of the rolls are naturally cooler than the center, as their heat is dissipated through contact with the bearings and otherwise. Moreover, to maintain proper lubrication of the roll necks and prevent burning of the grease, water cooling of the roll ends is ordinarily employed.

To obtain sheets having uniform gage across their width it is necessary that uniform pressure be maintained across the pack as it passes between the rolls. This means that the contour of the upper and lower rolls must be parallel. As the temperature of the center is higher than the ends, the rolls expand more in the center, increasing their diameter. To compensate for this effect, one or both rolls are turned to have a slight concavity of contour when cold. When they attain working temperature, the expansion causes the straight roll to become slightly convex and the concave roll decreases its concavity to such an extent that uniform gages are obtained. If a mill has too much concavity it is said to be "hollow" and the pack has horns or fish tails. If the mill is "full" in the middle, the pack is longer in the middle than on the sides and the sheets are thinner in the center than on the edges.

Finishing mill rolls are operated usually at temperatures between 550 deg. and 750 deg. Fahr. at the hottest point. Tests made by the Steel Corporation a few years ago proved that the chilled portion of the roll has the greatest resistance to breakage stresses at about 750 deg. Fahr. The strength diminishes only





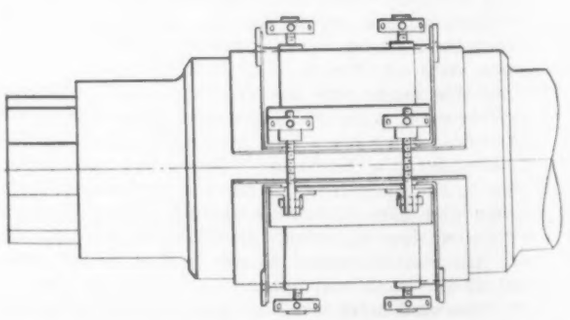


Fig. 3—Three Views (Diagrammatic) of the Electric Heater Designed for Preparing Sheet Mill Rolls for Their Work

*Electrical engineer, Freyn Brassert & Co., Chicago. This is abstract of a paper read before the Association of Iron and Steel Electrical Engineers.

slightly at lower temperatures down to 350 deg., below which point a material weakening was found. At temperatures above 750 deg. the strength was found to diminish until, at a temperature of 875 to 900 deg., which is a low red heat for cast iron, breakage occurred readily under comparatively light stress.

The distribution of heat in the rolls under normal operating conditions is shown in Fig. 2 and Table I.

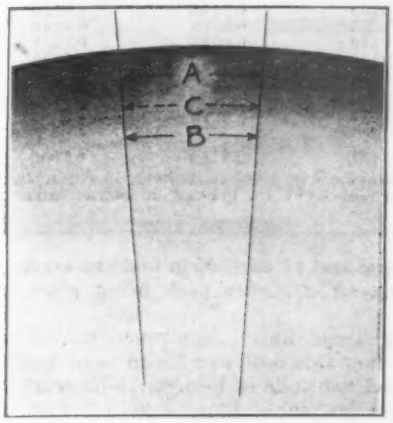


Fig. 1—Stresses Near Roll Surface Are Caused by Unequal Expansion. Thus, expansion at *A* is twice as rapid as at *B*, which may cause compressive stress along *A*, shearing along *C* and tension along *B*

These temperatures were obtained, in a test made at Vandergrift, by thermo-couples inserted in the top roll, collector rings being supplied to connect with the meter. The mill was rolling light gage sheets and care was taken not to exceed safe temperatures. It should be noted that the surface temperatures at points *A* and *C* indicate about 200 deg. Fahr. difference.

Table I—Temperatures at points indicated in Fig. 2, during normal operation:

Point A—703 to 736 deg. Fahr.
Point B—641 to 674 deg. Fahr.
Point C—510 to 542 deg. Fahr.
Point D—378 to 483 deg. Fahr.
Point E—399 to 447 deg. Fahr.
Point F—330 to 366 deg. Fahr.

As rolls are stronger and less brittle at normal rolling temperatures and as they have their proper shape only when heated, and, further, to minimize expansion and contraction stresses, it is highly desirable that roll temperatures be maintained as uniform as possible at the best operating point. On fast schedules it is possible to bring the rolls to a dull red heat. To restrict temperatures to safe limits, it is customary to cool the rolls, either with dry steam or with air.

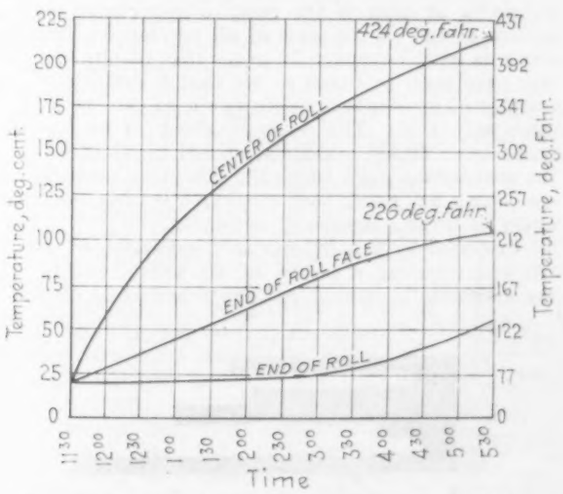
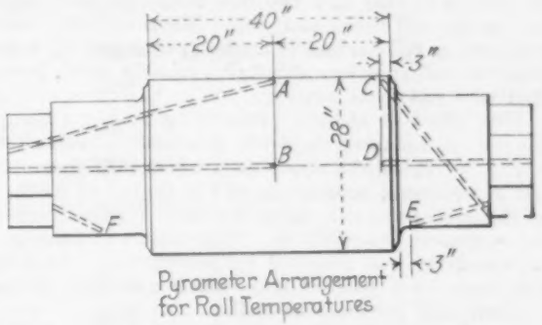


Fig. 4—Results of Test of a Sheet Roll Heater, Showing Growing Temperatures at Roll Center, at End of Face and at End of the Roll

Many seemingly perfect rolls are broken during the warming up process, when there is no pack in the mill. This is caused by the surface becoming heated so rapidly that the interior did not get warm enough to expand the slight amount its preponderating mass would require, to take care of the very rapid expansion of the face or chilled portion, and the roll is torn in two. Most roll breakage occurs in the fore part of the week, before the rolls have reached their final working temperature, and there is more breakage in the extremely cold winter months than in the summer, due to the lower temperature at which the warming up starts.

Records of one mill show that only 15 per cent of the rolls are discarded because they have been dressed down below the chill. The other 85 per cent are lost through breakage. Some rolls serve over 100 days, some less than 10 days. The average for this mill is about 47 days. A 28-in. x 44-in. roll weighs about 6 tons and costs about $70 per ton, or $420. The scrap value is about $15 per ton, or $90. All labor put on the roll is lost when it breaks. If it has served but half its useful life, the loss is $150 or more.

Some months ago the Inland Steel Co. undertook the development of a device for heating the rolls electrically. After a period of experimenting an equipment was evolved, consisting of a light angle frame, built in two halves and vertically split, as shown in Fig. 3. Space heaters, used as the heating medium, are of special dimensions and rating and somewhat special construction. The heating units are mounted in a flexible member attached to the frame and are suitably backed up by heat insulation inclosed between sheet metal protecting plates. The design has been developed to take care of ordinary variations in diameter of rolls. The two halves of the heater are clamped to the stationary rolls, usually after they are in place in the housing. The heating elements make direct contact with the roll surface. Thus they convey the heat to the rolls effectively and do not acquire temperatures more than a few degrees higher than the roll temperature.



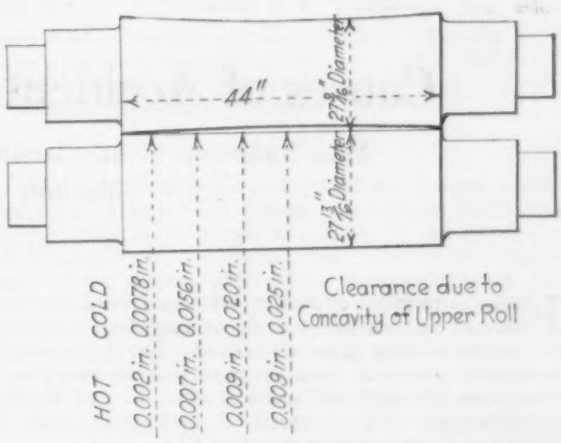


Fig. 2—(Upper View) Pyrometer Arrangement for Measuring Roll Temperatures at Various Points
Fig. 5—(Lower View) Clearances Found in Test of a Sheet Roll Heater

Fig. 4 shows the temperatures afforded with the heater and the distribution of heat in the roll. These curves were prepared from data taken in a recent test on a pair of 28-in. x 44-in. rolls. The rate of heating indicated was obtained by continuous application of about 28 kw. of energy for a period of 6 hours. The total power consumption of about 170 kwhr. represents

a cost of about $2 for the heating period. It will be noted that a maximum temperature of 424 deg. Fahr. was obtained at the center of the roll face and 226 deg. at the end of the roll face after 6 hr. heating. This represents a temperature difference of 198 deg. Fahr., which corresponds closely with the temperature difference between these points existing when the rolls are in normal operation.

These results do not necessarily represent the best that can be secured. Temperatures higher than 424 deg. Fahr. may be attained, if desired, either by longer or more rapid heating. In the above test the voltage was 15 per cent low. As the heat produced varies as the square of the voltage, this reduced the heating ability of the equipment 28 per cent. The heating units will stand considerably higher temperatures without damage.

The more rapid the heating, the more the center of the roll is heated and the less time the heat has to flow to the roll necks and ends. Moreover, with rapid heating, the roll surface is no doubt considerably hotter than the roll interior, although probably much less so than with gas flame heating.

The effect of electric pre-heating on the shape of the rolls in reducing concavity clearance is well shown in Fig. 5. It will be noted that, when cold, these rolls had a maximum separation at the center of 0.025 in. At the end of the run, after the heaters were removed, the clearance was 0.009 in. Thus about two-thirds of the concavity was removed by pre-heating. This test was made on a pair of rolls which had been dressed to about half the original chill.

In a test run last November a pair of 28-in. x 44-in. rolls was pre-heated to a temperature of 348 deg. Fahr. at the center of the face. After running through three or four crop ends to set the mills, some 28 x 30 x 96 orders were run. The first pack had about 12-in. fish tails. A sample strip, cut across the pack, was calipered, the dimensions of each strip and the average of several measurements of the pack being given in Table II.

Table II—Measurements of Thickness of First Pack (28 x 30 x 96) and the Individual Sheets in It (Inches)

Sheet No.	Left Edge	Center	Right Edge
1	0.0111	0.0124	0.0112
2	0.0103	0.0144	0.0120
3	0.0109	0.0143	0.0120
4	0.0105	0.0140	0.0110
5	0.0120	0.0147	0.0118
6	0.0120	0.0146	0.0113
7	0.0136	0.0145	0.0134
8	0.0112	0.0128	0.0117
Average	0.0114	0.0140	0.0118
Total	0.0917	0.1117	0.0946
Measuring thickness of pack	0.1081	0.1144	0.1056

Individual sheets are about 0.002 in. heavier in center than at ends. Pack is about 0.008 in. heavier in center than at ends.

In considering these data, cognizance should be taken of the fact that this mill was found to be hollow the entire week and fish tails of 8-in. to 10-in. resulted on the same order on succeeding turns. Orders of 28 x 36 x 96 have been successfully rolled on the first turn after preheating with the electric heater. As the rolls can be brought nearly to normal operating temperatures and shape by electric pre-heating, there is good reason to believe that practically all limitations, both as to character of orders and quantity of output, may be safely removed by this practice.

Causes of Accidents in Handling Objects

Most Numerous of All Classifications, but Not the Most Serious—Machine Accidents Worst

BY C. H. SMITH*

FOR the purpose of making an analysis of accidents we can assume every accident may be allocated to the existence of a cause or hazard. The cause may be considered not only from the material but also from a somewhat less material point of view, in that we give consideration to the hazard of carelessness and the morale.

In this particular instance we are concerned with the cause of accidents due to handling objects. In this category we would include all accidents due to the handling of objects with the exception of those due to hand tools.

For the purpose of making a practical study and obtaining an idea of the relative importance such accidents occupy in the scale of all accidents a statistical analysis must be made. In order that results be indicative care must be taken to see that a sufficiently large number of accidents are considered so the law of averages may hold. The analysis about to be discussed, based upon 89,436 accidents, should prove of value, as the assumption upon which the American accident table was based has never been disproved by any subsequent study of large numbers of accidents.

Prepared by the Industrial Commission of Wisconsin and covering a period of six years, ending 1920, the accidents here analyzed are reported as compensa-

*Continental Casualty Co., Chicago; this is abstract of an address before Mid-Year Safety Conference.

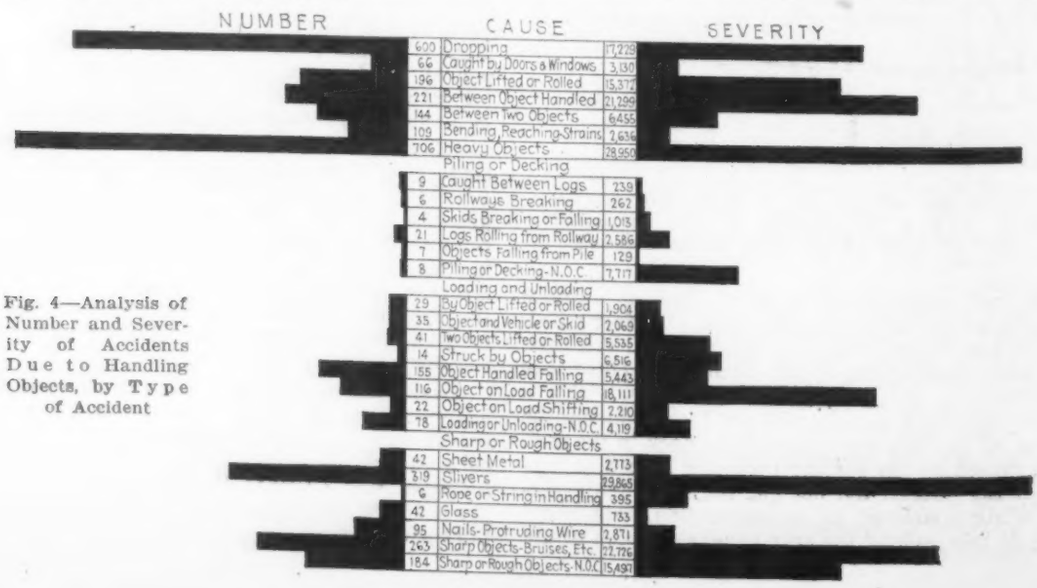
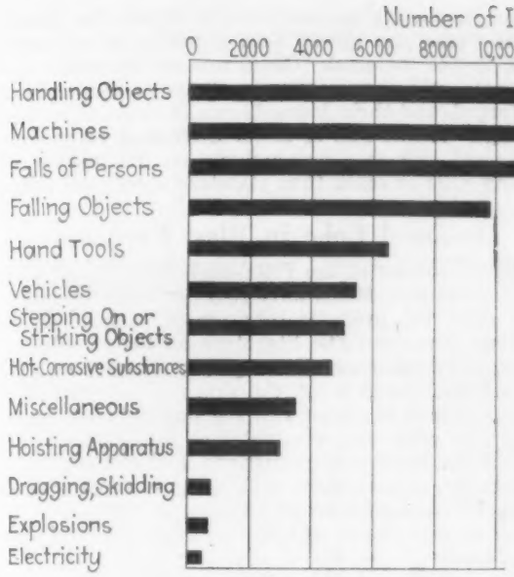

NUMBER
CAUSE
SEVERITY
600 Dropping 7,228
66 Caught by Doors & Windows 3,130
196 Object Lifted or Rolled 15,377
221 Between Object Handled 21,299
144 Between Two Objects 6,455
109 Bending, Reaching-Strains 2,636
706 Heavy Objects 28,950
Piling or Decking
9 Caught Between Logs 238
6 Rollways Breaking 262
4 Skids Breaking or Falling 1,013
21 Logs Rolling from Rollway 2,586
7 Objects Falling from Pile 129
8 Piling or Decking-N.O.C. 7,717
Loading and Unloading
29 By Object Lifted or Rolled 1,904
35 Object and Vehicle or Skid 2,069
41 Two Objects Lifted or Rolled 5,535
14 Struck by Objects 6,516
155 Object Handled Falling 5,443
116 Object on Load Falling 18,111
22 Object on Load Shifting 2,210
78 Loading or Unloading-N.O.C. 4,119
Sharp or Rough Objects
42 Sheet Metal 2,713
319 Slivers 29,865
6 Rope or String in Handling 395
42 Glass 733
95 Nails-Protruding Wire 2,871
263 Sharp Objects-Bruises, Etc. 22,776
184 Sharp or Rough Objects-N.O.C. 15,491

Fig. 4—Analysis of Number and Severity of Accidents Due to Handling Objects, by Type of Accident



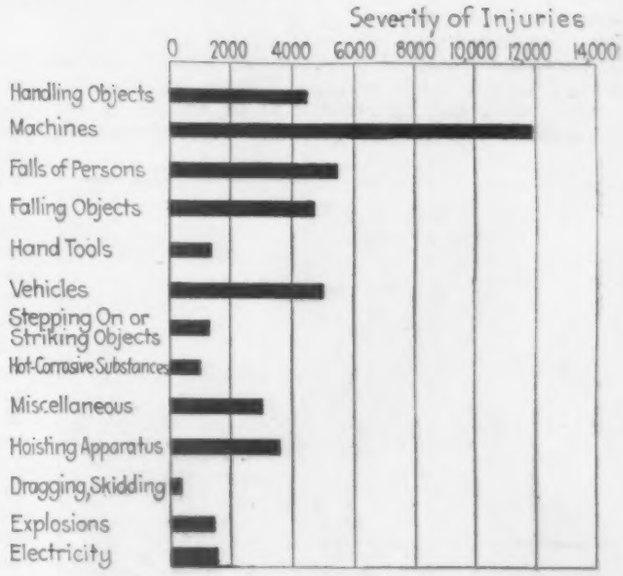


Fig. 1—(Above) General Analysis of All Accidents, by Number and Fig. 2—(At Right) Severity. Showing that Handling Objects Accounts for the Greatest Number, but Is Fourth in the Severity Scale

ble injuries. As there is a seven-day waiting period in Wisconsin, the actual number of occurrences in all probability was about 40 per cent greater.

During this six-year period the total of 89,436 accidents were distributed by cause as illustrated on Fig. 1. Close to 22,000, or approximately 24 per cent of all accidents, were due to the hazard inherent in handling objects. Distribution as to severity is illustrated on Fig. 2. Here it is noticed that, while handling of objects produced the greatest accident frequency, when analyzed by degree of severity, accidents of this class occupy fifth position.

A graphical illustration of the relative importance of object-handling accidents is illustrated in Fig. 3, which has been prepared to give a rough idea of the number and importance of the various divisions of object-handling accidents. The horizontal distance represents the number of accidents, while the vertical distance represents the severity expressed in terms of 300-day years. Now that we have a mental picture of the position these accidents occupy in the scale of all object-handling accidents, we are ready for the final analysis, or a study of the cause of these accidents.

An analysis of the number, cause and severity of the various divisions into which accidents due to handling objects are divided is shown on Fig. 4. This chart represents 3538 accidents reported to the Industrial Commission of Wisconsin during 1920. Numbers of accidents have been plotted on the left, while the severity has been plotted on the right to the scale of days lost. A study of these causes in descending order of severity proves interesting.

First position is occupied by accidents due to slivers, which are of only third importance as to number. Accidents due to handling of heavy objects occupy second position as to severity and first as to number. As these charts are largely self explanatory, it would be demonstrating the obvious to enter into a lengthy discussion or interpretation.

The charts are based upon figures compiled in one State only, and might vary somewhat were a much greater exposure to be taken. Industries in Wisconsin are pretty well diversified, however, and the results obtained are of sufficient importance to be taken as indicative.

The metallurgical industries of the United States, exclusive of iron blast furnaces, employed 44,000 men during 1922, an increase of nearly 18 per cent over 1921, according to statistics gathered by the Department of the Interior through the Bureau of Mines. The volume of work at mills in 1922 showed an increase of 37 per cent over the previous year; the increase at smelters was 9 per cent, while an increase of 69 per cent was shown for construction work, shops and yards connected with the mills and smelters. Accidents reported to the Bureau of Mines during the year resulted in the death of 45 men and in injury to 6678 men.

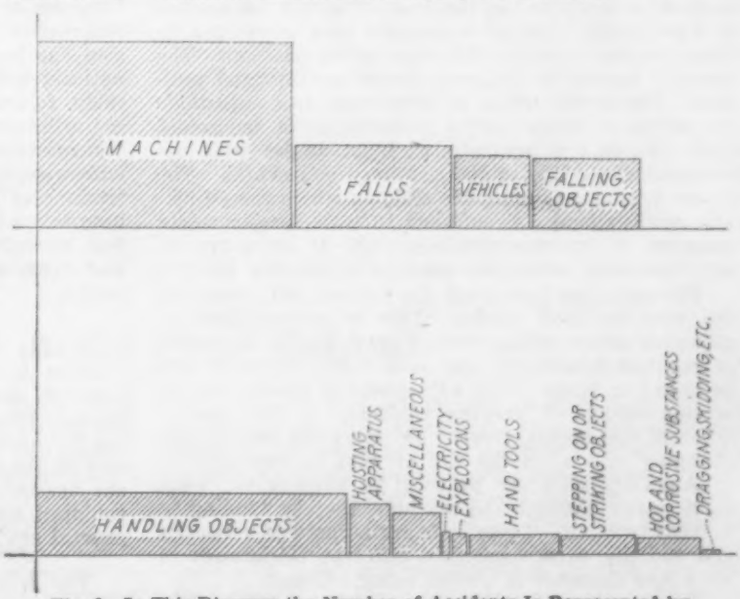
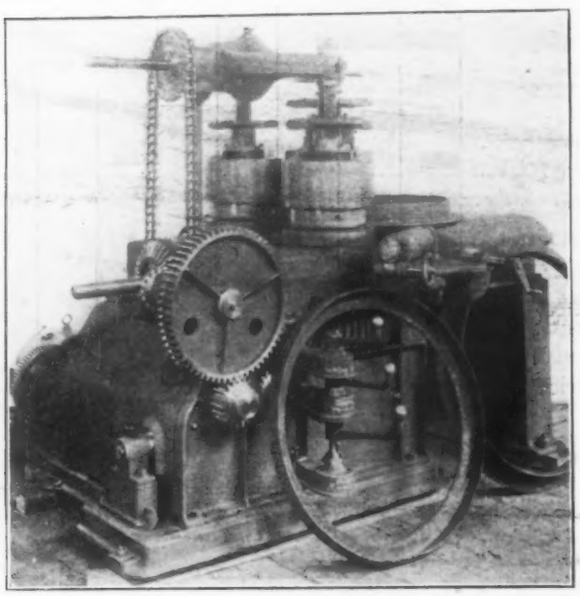


Fig. 3—In This Diagram the Number of Accidents Is Represented by the Length of the Block and Their Individual Severity by the Height. Thus the area of the block indicates the total seriousness of the cause of accident, or total number of days lost for each accident cause

Machine for Bending Angles Cold

An improved angle bending machine, designated as Hercules type PB, is being placed on the market by Amplex, Inc., 6 West Thirty-second Street, New York. Six sizes are available, ranging in capacity, on the smallest and largest machines respectively, for angles of 2¼ x 2¼ x 5/16 in. to 8 x 8 x 1 in. maximum, with legs out. It will also roll angles with legs in, but on this operation the capacity is for angles of a smaller size. Beams and channels ranging from 3 in. to 12 in. for the different sizes of machines may also be bent, as well as flats, rounds and squares. The smallest diameter to which work may be rolled is 24 in. and 60 in. for the smallest and largest machines respectively. In



The Rings or Segments Are Formed Horizontally. The auxiliary rolls at the ends of the table are to prevent material from twisting or slipping. The motor is mounted as shown

bending angles and other shapes cold, it is claimed that true circles or segments may be produced without the use of skilled labor, as no straightening or other adjustment is required after the work leaves the machine.

The machine consists of a cast base on the top surface of which the rolls are mounted, with roll shafts in a vertical position, operated by the driving mechanism contained in the base. The roll mechanism is what might be called a pyramid type except for its being vertical instead of horizontal in position. The drive is applied to two rolls which are in fixed position. The third roll is of idler type and adjustable for center distance, being mounted on a horizontal slide, the axis of which is at right angles with the common center line of the two fixed roll shafts. The power available to move the slide on which the adjustable roll is mounted is sufficient to move it when under pressure, being twenty times what is necessary to move the slide when the machine is running idle.

Provision has been made for vertical adjustment of the rolls on their shafts. This is accomplished by adjusting screws acting through bevel gears. By means of capstan handwheels the rolls when adjusted may be locked in place. This adjustment is simply for the accommodation of varying thickness in the legs of different size angles, thereby obviating the necessity of changing rolls when the size of work is changed.

Auxiliary rolls are provided to support the work as it passes through the machine, thereby tending to prevent twisting. These rolls are adjustable vertically and radially to accommodate different thicknesses of work and diameter of circles being rolled.

Bearings are provided with ample lubrication. The larger machines have outboard bearings for the roll shafts, and provision is made for opening the auxiliary bearing yoke to permit removal of closed rings.

A feature claimed for the machine is centralized control permitting one operator to handle the common run of work. On larger work a helper is required in handling the material. Gears are cut from the solid, and those subject to heavy strain are of steel. Shafts are forged, and their journals run in renewable bronze bearings. Either belt or motor drive may be provided.

Special rolls may be employed on the machine for bending rails or other than standard structural shapes.

Steamed Coke in Blast Furnaces

Recent studies at the Pittsburgh experiment station of the Bureau of Mines have revealed some interesting facts as to the probable behavior of steamed coke in the blast furnace. The literature on the chemistry of the blast furnace was thoroughly reviewed, and with this information in mind, the probable behavior of the coke sulphur in the blast furnace was deduced. Enough small-scale tests were conducted to furnish a check on most of the important deductions, and the conclusions derived therefrom accord with what is already known in regard to the forms of sulphur in coke, and fit in well with the general opinion concerning blast furnace reactions.

The results of this study suggest two possible methods for correcting the coke sulphur trouble in the blast furnace; first, this surface sulphur could be removed by some such process as steaming, or hydrogenation: or secondly, it could be prevented from entering the spongy iron at this zone by dipping the coke in some material which would absorb the sulphur more readily than would the iron. Possibly lime could be used in this case; but whatever the nature of the substance it should be such that it will not interfere with the proper combustion of the coke at the combustion zone. Further studies along this line would no doubt lead to some interesting discoveries as to the behavior of the sulphur in the blast furnace. The results of this study, made in cooperation with the Carnegie Institute of Technology, are given in Serial 2518, "Forms of Sulphur in steamed coke and their action in the blast furnace," by John H. Thompson, research fellow, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

Historical Monograph on Mechanical Power Transmission

An historical treatise on "Power; its application from the 17th dynasty to the 20th century," has been published by the Morse Chain Co., Ithaca, N. Y., it being the reproduction of an address delivered by F. L. Morse of that company before the American Mining Congress at Milwaukee, Wis., Sept. 27. An interesting observation is that the evolution of power transmission has been closely allied with the rise and fall of nations; great changes in political history have inevitably followed the improvements and inventions for the utilization of power in mining, manufacturing and transportation. The booklet is profusely illustrated with wood cuts and some half tones, many of the illustrations of the early days of civilized history having been taken from the only available sources, namely the few hieroglyphics, sketches and bas-relief on pottery, and from the writings of the philosophers of that period.

L. M. Graves, National Union Bank, Boston, Charles A. Reed, Reed, Fears & Miller Inc., Boston, pig iron, and Jacob Grossmann, L. Grossman & Sons, Quincy, Mass. have been made trustees of the Wollaston Foundry Co., Norfolk Downs, Quincy, Mass., property by the referee in bankruptcy. It is the purpose of the trustees to sell the property. The foundry is equipped with a 17-ton cupola, electric crane and other general equipment.

The will of the late Gordon Battelle, Columbus, Ohio, director of the American Rolling Mill Co., provides for the establishment of a metallurgical institute at Columbus, for the discovery of new and advanced metallurgical processes ahd the better education of men for employment in metallurgical industries.

Safety Council Meets in Buffalo

Annual Congress Had Large Attendance—Metals Section Overshadows Others, Having Practically All Large Steel Mills Represented

L. A. DE BLOIS

BUFFALO, Oct. 5.—The twelfth annual congress of the National Safety Council was concluded here today. In point of attendance, general enthusiasm and sincerity of purpose, the congress is regarded by leaders in the safety movement as the best ever held. Each section had a greater attendance at the sessions than previous years brought out and the exhibits of safety devices and appliances were of a larger variety than viewed at early meetings.

In relative importance the Metals Section overshadowed other units. The several sessions of delegates representing iron and steel industries were largely attended. Motion picture exhibitions, showing the progress of the safety movement in steel mills, added to the value of the meetings.

L. A. De Blois, Wilmington, Del., was chosen president. He is chief of the safety work at the Wilmington plant at E. I. duPont de Nemours & Co. Since 1922 Mr. De Blois has served as vice-president of the council. The following were chosen vice-presidents: C. B. Auel, East Pittsburgh, Pa.; Marcus A. Dow, New York; George T. Fonda, New York; H. A. Renninger, Allentown, Pa.; David Van Schaack, Hartford, Conn.; vice-president and treasurer, Homer E. Neisz, Chicago.

Executive committeemen: C. B. Auel, East Pittsburgh, Pa.; Walter G. King, New York; C. E. Pettibone, Boston; L. A. De Blois, Wilmington; George T. Fonda, New York; Henry A. Hall, New York; Julian H. Harvey, Kansas City; Robert E. Herdegen, Walkerville, Can.; Col. C. M. Minkle, Chicago; Homer E. Neisz, Chicago; A. D. Risteen, Hartford, Conn.; Herbert A. Rowe, New York, and R. B. Stroeckel, Hartford, Conn.

Past-presidents: Arthur H. Young, Chicago; Marcus A. Dow, New York.

Representing sections: David Van Schaack, Hartford, chairman street and highway safety; A. W. Whitney, New York, chairman education section; James P. Barnes, Louisville, chairman electric street railroad section; F. P. Walker, Detroit, chairman ice, refrigeration, taxicab and delivery section; A. L. Watson, Niagara Falls, N. Y., chairman chemical section; H. W. Jones, Boston, chairman public utilities section; Fred Metcalf, St. Paul, chairman steam railroad section.

Newly-elected officers of the Metals Section are as follows: T. H. McKenney, superintendent of labor and safety Illinois Steel Co., Chicago, chairman; A. C. Gibson, Spang-Chalfont Co., Pittsburgh, vice-chairman; Fred Benett, Buckeye Steel Castings Co., Columbus, Ohio, secretary.

Officers of the Automotive Section are as follows: L. E. Averill, Oakland Motor Car Co., Pontiac, Mich., chairman; E. H. Cotcher, Maxwell Motor Co., Detroit, Mich., vice-chairman; R. F. Thalner, Buick Motor Co., Flint, Mich., secretary.

Coincident with the congress, the ninth annual first aid meet of subsidiary companies of the Bethlehem Steel Corporation was held at the Broadway Auditorium on Oct. 5. Teams representing fourteen units of the corporation competed for trophies and cash prizes for quickness and efficiency in working out designated first aid problems.

T. H. McKenney stated that delegates to the council from iron and steel plants gain valuable ideas from the papers and discussions on those features of safety work having particular application to the steel industry.

"The two principal sessions were attended by more than 400 delegates who paid rapt attention to the subjects and stories of accomplishments by those who participated in these meetings," said Mr. McKenney. "The motion picture forwarded to Buffalo and shown at the second session of the metal section, touching on the subject of fire protection and prevention in the plant of the Youngstown Sheet & Tube Co., was one of the most instructive features of the congress.

"Practically every large steel mill in the country was represented in the metals section sessions, and all the papers showed careful preparation and wholesome desire, on the part of those who have made progressive steps in the conservation of life and property, to share their accomplishments with fellow delegates."

One of the most instructive and entertaining features of the congress was a playlet, "A Scene in a Foundry," by a group of workers from the Edgar Thomson works of the Carnegie Steel Co., Braddock, Pa. The playlet was given in the ball room of the hotel on Thursday afternoon. The actors, attired in working garb, showed careful preparation and their offering came as a climax to a general round table discussion, "Getting Safety Across to the New Man."

The annual banquet of the organization was held in the Hotel Statler ball room Thursday night. Sir Thomas Oliver, chief of the medical division industrial bureau, home office, England; Judge Ambur, New York, and Dr. Forbes Godfrey, minister of public health and labor in Ontario, were the speakers.

Safety on the Plant Railroad

AS C. F. Dullenkopf, superintendent of yards, Bethlehem Steel Co., Bethlehem, Pa., was not present, the chairman called upon J. M. Woltz, of the Youngstown Sheet & Tube Co., Youngstown, Ohio, to lead in remarks and discussion in connection with this subject.

He enumerated some of the items of protection for different classes of cars on the plant railroad, particularizing regarding the operation of narrow-gage or "dinky" railroads, such as means of safely connecting the small engine to the larger equipment, and some special arrangement as to coupling. He suggested, as a point for discussion by the meeting, the use of an automatic coupler, the possibility of devising an automatic coupler that can be used on ingot cars and also successfully used on dump cars; also, in taking care of trackage, all switches to be properly numbered, and a bulletin or booklet containing the information as to the location and names of tracks and switches.

The chairman stated that his plant had devised an automatic coupler and is equipping all dinky equipment with them, and that they are working very successfully.

Mr. Johnston of the American Mutual Liability Insurance Co., Boston, stated that, as former acting foreman of transportation and safety inspector Newport News Shipbuilding & Drydock Co., he is interested in

this problem. He mentioned a few of the methods used on the plant railroad, as follows: Standard-gage tracks only were used, operated with two 60-ton steam locomotives, two 30-ton and one 20-ton General Electric Co. storage battery locomotives; all the flat cars, originally received as second-hand equipment and in poor condition, in course of time were made thoroughly safe for some rated capacity, which was stencilled on the side of each car, one of the strict rules of the safety department being that no car was to be moved if overloaded. All such cars were equipped with standard couplers, and a rule was made that no car ought to be moved unless such couplers were in perfect shape, and any found damaged were immediately reported and the car sidetracked for repairs. All cars within two weeks of their reception had four side steps and grabirons and, if a step was bent or a grabiron pulled loose, that car was immediately sidetracked for repair. This was necessary, as the train crews rode the cars frequently on the longer hauls, and were in the habit of boarding them after some considerable speed was attained.

Regarding hauling long trains, where there were no automatic brakes on the cars, the braking being done only on the locomotive, it was found necessary to reduce the size of trains to six cars or less. On foreign cars coming in from the Chesapeake & Ohio Railway they hauled as high as 15 or 18 cars, but always by hooking up the automatic air. On the locomotives a sign was placed on the forward and rear end: "Danger! Keep Off!" And the train crews insisted that the men around the plant should not ride on the running-board.

He stated that the most difficult problem from the standpoint of safety was crossings at grade, which formerly were guarded by watchmen who flagged road traffic for trains about to pass. They did away with this method, and had the conductor of each train advance ahead of the train to flag traffic, giving pedestrians and motor vehicles the right-of-way wherever possible. A rule was made and inforced that train crews should not step on the front running-board between rails, but mount it from outside the rail, getting on when the train was barely started.

The company standardized the switches for safety with good throws, names, track names, with orders to train conductors to spot cars in certain locations, beyond certain switches by their names, tracks also by their names—with the final result that no accidents of any kind whatever occurred due to the transportation of materials on flat cars or foreign cars about the yard. He concluded by saying that the transportation of materials had been made safe by rigid rules and severe discipline for infringement, and by maintaining standard equipment, standard couplers and standard side steps and grabirons; also standard switches and tracks, together with proper loading.

Mr. Oartel, Carnegie Steel Co., Pittsburgh, a former chairman of this section, stated that as a steel mill man he knew that the plant railroad question is vital. His company a few years ago had adopted safety measures upon finding that about one-third of the very serious accidents were being caused by the plant railroads; it was not due to overloading or defective equipment, but to man failure. He particularized as follows: Standing in middle of track and stepping on footboard of approaching locomotive; coupling on short side of curve; trespassing—men going from one department to another, crossing either at crossing or somewhere else and being caught; hanging on side of car which is sideswiped somewhere; climbing over cars instead of using bridge over track, etc.

They had a "railroad drive" or campaign for two years, which proved very successful; every month the plant and department safety committees put "Plant Railroad Drive" on their programs to keep the subject before them; used bulletins picturing dangerous practices that caused accidents; on all literature used in inter-mill work printed the slogan "Make Railroading Safe." In the Homestead plant the narrow-gage department formerly produced a lot of accidents, but today it is one of the safest departments in the entire company, because they had cleaned up the accidents and cleaned up the causes of the accidents and now use automatic couplers on both broad and narrow gages, and had lately installed a very effective device on the hot-metal ladles.

J. W. Benner of the Homestead plant supplemented Mr. Oartel's remark in connection with safety devices on the hot-metal ladle cars. Before the safety campaign they had no brakes—the trains that carried from four to six ladles using the engine brakes. They finally secured a device in the form of a slow-acting valve controlling the automatic air brake on each ladle. This worked successfully and they devised means for coupling up the cars on any curve or on any grade, which also had proved very successful and had been in operation now over two years. On the narrow-gage there were about 5000 cars; had started with the common link-and-pin coupling, which smashed fingers and cut off hands, and had finally adopted the Jenney coupler, as on the broad-gage cars, and thus eliminated a great many accidents in that way.

Benjamin F. Faunce emphasized the importance of safe operation of plant railroads in the larger organizations, stating that in plants like the Homestead and Bethlehem, at Johnstown, it was a bigger undertaking as a management proposition than any division superintendent of any railroad in the country had. It is surprising how many times the material is handled in these plants. They work at great disadvantage, as these old plants were built when locomotives and cars were small and safety considerations were not a problem, with the result that trestles and a thousand other things were too close to the rails, etc. Old equipment stands in the way; piling material close to the rails is bad and dangerous; clearances are a big factor in safe operation.

Dr. G. H. McKinstry of the Collinwood Steel Co. stated that accidents do not "happen." They are caused from some improper condition. This applies to plant railroads as well as other operations. His company considers its railroad equipment as ideal as can be made; standard clearances of 8 ft. are maintained and the crossings are clear and well lighted and are guarded by a safety gate and also a watchman. Where cars enter a building they must be preceded by a switchman; no flying switches are permitted inside the plant, and no one is allowed to mount or ride cars except train crew, safety engineer or yard superintendent. On all inclines the rails are provided with stops which must be kept locked, and at the approach to all buildings there are stops which must be kept in place. This has eliminated practically every accident from a railroad cause. Guarded cross-overs are provided with filler blocks to avoid catching shoes inside the rail. The layout of tracks is such that none cross each other. When car repair is going on, a sign is placed on the track.

Secretary Northwood stated that a report had come into his office recently of an accident in the plant to a railroad man, from one of the old safety chains that they had insisted on putting on a hot-ladle operation; the man had hurt his hand climbing in to hook the safety chain. They wanted to know if there was not some way they could take off the safety chain, and he had replied, "We insist on those safety chains and on the railroad men hooking them up before hooking our cinder ladles to the dump." The speaker wondered if anybody present had had accidents from using the safety chain on the hot-ladle trains. The trouble had not been so much with the equipment but with the jay-walking—they had been driving very strongly on "plant jay-walking"—men walking between rails instead of along tracks and crossing without looking, etc. The main trouble has been with the men themselves, the human element, and plant committee has been driving strenuously to make every man stop, look and listen before he steps over a railroad track.

Safety Committees

DECLARING the most important single factor in the development of safety work in all industrial establishments to be the safety committee, Arthur H. Young, manager Industrial Relations Department, International Harvester Co., Chicago, stated that the work of safety committees in the International Har-

vester Co. plants has laid the foundation for personal contact between men and management that has brought about better economical and industrial relations.

"Safety is the one subject on which executives and workers can get together on a non-controversial basis, and the very fact that all parties discussing the subject, and taking steps toward the conservation of life and property, are agreed on its value and usefulness, leads to a harmonious foundation on which other topics, vital to both sides, can be taken up," Mr. Young said.

The speaker stressed the fact that safety efficiency should be a matter of participation by the worker and not simply a matter of cooperation.

"Every plant striving for greater safety measures needs 100 per cent participation," he said. The speaker advocated mixed committees; not only groups of foremen, superintendents and other executives, but groups of employees working in concert with foremen and superintendents. The speaker referred to safety development in the harvester plants as a builder of morale, because it has brought about pride of accomplishment.

Discussing "Plant Publications," Mr. Young said: "The true function of the plant magazine is to aim at a contact point between executives and workers. Industrial publications cannot be mere organs of propaganda for the management, but must be constructed in a manner that will be acceptable to both workers and managers.

"The same is true of the other side of the question; the plant publication cannot be limited to an organ of propaganda for the worker only, but should be edited in a way that will serve the mutual interests of both."

The speaker dwelt on the necessity of making plant organs simple and dignified and easily understood by the men.

STEEL TREATERS AT PITTSBURGH

Record Attendance at Opening Sessions—Exhibition a Marked Success

PITTSBURGH, Oct. 9.—Most auspicious has been the opening of the fifth annual convention and exhibition of the American Society for Steel Treating. Members and visitors from many sections of the country have gathered in large numbers and the prospects are that this year's affair will far transcend any previous one. Elaborate arrangements have been made by the Pittsburgh chapter under the general direction of J. Trautman, Jr. of the Colonial Steel Co., for the convenience and entertainment of the organization. The first day's registration, estimated at about 850, exceeds the splendid record made last year at Detroit.

The First Session

The first session was held in the ballroom of the William Penn Hotel, the headquarters of the convention, at 10 o'clock yesterday morning. The portion of the meeting preceding the technical program was presided over by J. Trautman. A welcome to Pittsburgh was extended on behalf of the Pittsburgh chapter by W. J. Merten followed by a brief address of welcome by Mr. Trautman. In the inforced absence of the Mayor of the city, H. M. Irons of the mayor's office also extended a cordial welcome to the society after extolling the city's position in the steel industry. On behalf of the Pittsburgh Chamber of Commerce, A. L. Humphrey, its president, who is also a member of the steel treaters' organization, completed the welcoming formalities, followed by a felicitous response by T. D. Lynch, president of the steel treaters.

The first technical session followed these exercises. It was presided over by W. J. Merten, chairman of the Pittsburgh chapter. An attendance of over 300 at this meeting attests to the enthusiasm of the convention. Three papers were presented and discussed. They were delivered by the authors as follows: "Metallography and Testing of Oxyacetylene Welds," by J. R. Dawson, research metallurgist Union Cabinet & Carbon Research Laboratories, Inc., Long Island City, N. Y.; "Some Observations on Furnaces and Fuels, Including the Electric Furnace for Heat Treating," by E. F. Collins, consulting engineer General Electric Co., Schenectady, N. Y., and "The Tempering of Tool Steels," by J. P. Gill and L. D. Bowman, metallurgists Vanadium Alloys Steel Co., Latrobe, Pa. Abstracts of these papers, which were not preprinted, and of the discussions will be published in the full report in THE IRON AGE, Oct. 18.

The Exhibition Very Large

The steel exhibition, which is housed in Motor Square Garden, some six miles from the headquarters, was opened at 1 p. m. yesterday. It is an impressive display both in its comprehensiveness and in the general layout. Nearly every booth was ready for visitors. The entire available space has been filled while about 35 per cent of the total, applied for in addition, had to be rejected. Orchestras on both floors is an innovation this year. Full details will appear in the complete convention report.

In a room in the exhibition building's basement, what is designated as King Tut's room, are held the afternoon sessions and symposiums, the morning sessions taking place at the hotel headquarters. Yesterday afternoon there was a brief session on sheet steels at which two papers were presented, one on "Automobile Sheet Steel Specifications," by H. M. Williams, metallurgist General Motors Research Corporation, Dayton, Ohio, and one on "The Annealing of Sheet Steel," by F. G. White metallurgical engineer National Enameling & Stamping Co., Granite City, Ill.

Today's sessions include one this morning on the general subject of "Carburizing" with a round-table discussion under the direction of the Standard Committee, with R. M. Bird, chief metallurgist Bethlehem Steel Co., as chairman.

The annual smoker and entertainment, always a feature eagerly looked forward to and well attended, is in progress tonight at the William Penn Hotel.

Statistics of Common Carriers

In a 32-page pamphlet the Interstate Commerce Commission has made a preliminary abstract of statistics for the Class I railroads. Outstanding features show 777, 132 stockholders and a total investment, including current assets, etc., of $24,763,506,472.

Physical quantities reported include 234,986 miles of road, with sufficient second and additional tracks, yard track and sidings to make a total trackage of 382,101 miles. Locomotives at the end of the year included 64,139 operated by steam and 373 others, mainly electric. Freight cars at the end of the year numbered 2,293,402, with an aggregate capacity of 98,847,236 net tons or an average of 43.1 tons.

Employees averaged 1,627,120, with total compensation of $2,640,738,182, or an average of $1,623 each. Consumption of fuel amounted to 127,213,184 net tons. Revenue freight carried aggregated 1,840,954,570 net tons, and 339,285,347,571 ton-miles, showing an average haul of 184.3 miles. Passengers carried numbered 967,384,978 and 35,469,841,029 passenger-miles, giving an average of 36.67 miles. Revenue per ton of freight was $2.17, while per ton mile it was 1.177c. Revenue per passenger averaged $1.11, while per passenger-mile it was 3.027c.

Express company and the Pullman Co. operations are included.

Stockholders of the Dorris Motor Car Co., St. Louis, will meet on Nov. 2 to consider an offer from Eastern financial interests to buy the company. The refinancing or other disposition of the property has been discussed since the failure of the recent plan to merge the Dorris with the Haynes and the Winton in a new company along the lines of the General Motors Corporation.

NOT MARKET MENACE

Official Statement as to Steel Vessels to Be Scrapped by the Navy

WASHINGTON, Oct. 9.—The total quantity of steel in the battleships and battle cruisers to be sold by the Navy and scrapped by purchasers under the terms of the four-power treaty for limitation of armaments has been officially estimated at 205,000 tons. This compares with 199,677 tons of ferrous metal which was estimated by THE IRON AGE last week. The official estimate was announced by Capt. E. W. Bonnaffon, officer in charge, in the sale of naval vessels. He issued a statement on the subject in response to inquiries which indicated that there was some concern that the scrapping of these vessels would have an adverse effect on the market. The statement of Captain Bonnaffon disposes of any apprehension on this point.

The statement in part follows:

"The total amount of ferrous materials contained in the 21 battleships and battle cruisers to be sold by the Navy Department in October and November, and scrapped by the purchasers in accordance with the treaty limiting naval armament, is estimated at approximately 205,000 tons. As the total annual production of scrap metals in this country is estimated at 20,000,000 tons, half of which is produced by the mills and half obtained from outside sources, it will be seen that this is little more than 1 per cent of the total production. The sale of this scrap will be distributed over more than a year, so there is not the slightest probability of this metal overloading the market or affecting it in any way.

"Experts tell us that the scrapping of these vessels presents no problems which have not been solved in this as well as other countries, and can readily be accomplished by modern methods of cutting and breaking. Of the ships under construction on the ways, a comparatively small proportion of their designed tonnage has been erected. Only a small amount of armor has been placed on them—259 tons on the Indiana, 511 tons on the South Dakota, lesser amounts on other vessels, and on some none at all. The thickest armor plate can be cut, it has been demonstrated, and this is being done continually on other vessels that are being broken up.

"The older battleships afloat can be broken up by the same means which are being successfully used in the scrapping of the Kentucky, Ohio, and other vessels which were previously sold, and are now being scrapped by the purchasers.

"In Great Britain, Germany, Holland and other countries ship-breaking has become quite an industry. In England one firm has purchased 135 vessels for scrapping. The most modern methods are already in use by firms engaged in ship-breaking in this country, the most advanced apparatus is available, and there is no reason why the business should not be made successful in America as it has been abroad. The Navy will take pleasure in furnishing the fullest information available to prospective bidders, if they will call upon or address Officer-in-Charge, Sale of Naval Vessels, Room 1008, Navy Department, Washington."

TARIFF SUSPENDED

Increase in Short Haul Freight Rates Not Approved by Commission

WASHINGTON, Oct. 9.—Acting upon protests from 42 iron and steel companies and commercial organizations in Pittsburgh, Bethlehem, Beaver Falls, and Coraopolis, Pa.; Buffalo, N. Y.; Parkersburg, W. Va., and Cleveland, Elyria, Youngstown, Alliance, and Lorain, Ohio, the Interstate Commerce Commission last Saturday suspended from Oct. 7 to Feb. 4 a total of 71 tariffs proposing increases in short haul rates on iron and steel products in western Pennsylvania, eastern Ohio, and northern West Virginia.

While the railroads estimated that the increase in rates would average approximately 15 per cent, the iron and steel manufacturers pointed out that increases as high as 60 per cent were proposed in some instances. The object of the schedules was to do away with so-called fourth section departures which were condemned by the commission in passing upon the complaint of the American Shipbuilding Co. against the Director General and the carriers affected. The fourth section departures which the commission ordered removed consisted of joint rates higher than the aggregate of intermediates, the latter being made of so-called short haul rates.

The new rates proposed from Pittsburgh to typical points in western Pennsylvania and eastern Ohio, such as Beaver Falls and Newcastle, Pa., and Youngstown and Cleveland, represent an increase of 15.7 per cent; from Woodlawn, Pa., to the same destination, 34.2 per cent; from Beaver Falls, 24.7 per cent; from New Castle, 23.1 per cent; from Struthers, Ohio, 23.9 per cent; from Youngstown, 18.8 per cent; from Akron, 25 per cent, and from Cleveland, 16 per cent.

The Jones & Laughlin Steel Corporation in its protest maintained that there was no necessity for the increases, particularly from Woodlawn, inasmuch as there had been no departures in rates from that point. Railroads contended that increases from Woodlawn were necessary in order to prevent disturbance of the old rate relationships. The greatest increase proposed in the schedules is from Woodlawn to Wheeling, W. Va., a distance of 81 miles. The present rate is 11.5 cents per 100-lb., while the proposed rate is 18.5 cents, an increase of 60.9 per cent. Other sharp increases proposed are from Woodlawn to New Castle and Struthers. The proposed increase in these cases is 50 per cent. Other increases proposed include those from Wheeling to Cambridge, from 9.5 to 13 cents or 36.8 per cent; from Woodlawn to Youngstown, from 8 to 10.5 cents or 31.2 per cent; from Beaver Falls to New Castle from 7 to 9.5 cents or 35.7 per cent, and from Canton to Alliance, Ohio, from 6 to 8 cents or 33⅓ per cent.

United States Behind in Shipbuilding

Not only Great Britain and Germany, but Italy, France and Holland, as well, are building more tonnage than the United States today, says a statement just issued by Lloyd's Register of Shipping, giving returns for the quarter ended Sept. 30. In the past four years, it is pointed out, this country has fallen from first to sixth place among the shipbuilding nations of the world.

World construction at the close of the quarter just ended was smaller than at any time since the close of the war, Lloyd's Register states, and this represents a decline of more than 165,000 gross tons in comparison with the preceding quarter, ending June 30, last. In the past three months the aggregate of American construction decreased 34,000 tons, that for Great Britain and Ireland, 66,000 tons, and for all other countries combined 65,000 tons.

The following table shows in gross tons the comparison of construction orders now, as compared with three months ago:

	October 1	July 1
Great Britain and Ireland..	1,271,195	1,337,759
United States.....	99,383	133,660
Other Countries.....	1,007,119	1,072,437
World Total	2,377,697	2,543,856

Mechanical stokers sold during August are reported by the Department of Commerce at 135, of 71,693 hp. total. This compares with 52,518 hp. in July, 59,719 hp. in June and a monthly average of 76,403 hp. in the first half-year. January, April and May showed larger totals than August, May leading, with 100,513 hp.

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ESTABLISHED 1855

THE IRON AGE

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The Case of the Railroad Brotherhoods

The railroad train service men are asking for an increase of wages, specifically a restoration of the maximum that they were paid in 1920, from which they were reduced by the Railroad Labor Board in 1921. There must appear to them to be a good deal of merit in their contention. They suffered a reduction. Their compensation never rose so high in comparison with the pre-war rate as did that of other railroad employees, and now it is relatively much lower than what the latter get. Moreover, when they view the high wage rates for building mechanics, and indeed suffer from them, they justifiably may think that they have grounds for dissatisfaction.

All of this may sound strange, considering that the men who operate the trains are united in strong labor unions. Either the brotherhoods have been moderate heretofore, or unionism does not have the commanding effect upon wages that is commonly supposed.

However, none of these things is a valid reason for now increasing the wages of the trainmen. The fact is that their present compensation bears about the same proportion to the pre-war as does the general economic index. In other words, these workers are neither better off nor worse off than they were. The other railroad workers are better off, to be sure, but their good fortune is at the expense and pain of other people. The trainmen will increase that pain if they get what they are asking and what they think they want. Perhaps they do not appreciate what they would be doing.

Yet it is obvious enough that any increase in the cost of railroad labor must be either at the expense of the stockholders of the roads or at that of people who pay for freight and passenger traffic. The yield of railroad investment is already so low that they are no longer attractive and consequently there is but little extension and improvement of the means of transportation. On the other hand, the high rates for freight and passage are a burden and grievance to millions of people.

Putting the case simply, the trainmen are now getting compensation that is closely in harmony with the general writing-up of values. They are asking for more than the average because their fellow workers in the maintenance service are getting more. Granting the demands of the brotherhoods would merely aggravate an economic situation that is already bad. Brute force may accomplish that, just as the anthracite coal miners managed it. The full power of brute force is not, however, always exercised with advantage to the strong. What may look like advantage turns out to be quite otherwise. So is it now with the affairs of management and labor. The former is not trying to screw down the latter. In resisting the demands of labor, it is simply trying to avert a capsizing of the boat. Labor is doing its utmost to produce that calamity, not understanding that if it should happen its millions of workers would prove to be the poorest swimmers.

The rank and file of labor is not expected to understand this. To them an advance in wages is like manna from heaven. They wot not that in present circumstances it has the poison of toadstools. The leaders of labor, however, are intelligent. Especially so are the leaders of the brotherhoods. It is their duty to guide their followers wisely; not to let themselves be pushed by clamor and strike votes. The rank and file may be disappointed and discontented, but that will not be so bad as a half million railroad workers out of jobs, as happened in 1921. It is no cry of wolf to say that tightening of the stranglehold of labor is leading to the like of that again.

Steel Capacity and Performance

Rated, or theoretical, steel ingot capacity in the United States, taken from the annual statistical reports of the American Iron and Steel Institute, has been as follows, in gross tons, at the end of the years named:

1919	53,193,905
1920	54,802,225
1921	55,817,685
1922	56,060,770

Capacity in steel castings has been about 2½ million tons.

The capacity left by the war may be taken as that at the end of 1919 rather than that at the end of 1918, as there was uncompleted work when the war suddenly ended.

The figures given above show a post-war increase of 5 per cent in capacity, which is quite

different from the dismantling of war time plants that had been predicted in some quarters. There is indicated, not a belief that the country needed more capacity, but a desire on the part of individuals to build. In other words, the steel industry is competitive as industries very naturally are.

Capacity was not reported prior to 1913, the earliest statement being that of Dec. 31, 1913, when existing plant was rated at 39,689,265 tons for both ingots and castings. The small tonnage of electric steel capacity was not separated as to ingots and castings, making an uncertainty of a few thousand tons, the ingot capacity being approximately 37,925,000 tons.

Production of ingots in 1913 was 30,280,130 tons. Some new plant came in during the year. There was considerable enforced idleness late in the year on account of lack of orders. Study of the various points indicates that if the 37,925,000 tons rated capacity had been available throughout the year, and the supply of orders had not fallen off late in the year, production would have been about 35,000,000 tons, which would be 92 per cent of rated capacity.

In 1916 there was full operation practically throughout the year, with a production of 41,401,917 tons of ingots. Rated capacity was stated at 43,827,500 tons at the beginning of the year and at 47,588,695 tons at the end of the year. If 31 per cent of the new capacity be added to the original capacity, the average capacity during the year was 45,000,000 tons, of which the reported production was 92 per cent. Thus the factor is given some standing.

In 1916 and in previous years the steel mills were able to operate well as long as they had orders. Since then there have been various difficulties, in respect to transportation, labor and other matters. It may be that in making the last returns the steel mills took account of such conditions and rated their capacity more conservatively. Applying the 92 per cent factor to the last reported capacity gives 51,500,000 tons. Under favorable conditions the industry might do better than this. Its best actual *rate* of production was a trifle over 49,000,000 tons a year, last April. On account of high labor costs, more attention must be given to the fact that some productive units are less efficient than others, and thus the real commercial capacity would be less than the capacity under the most favorable conditions.

Composite Prices as Indices

The value of the composite prices of THE IRON AGE as a real gage of market tendencies has been demonstrated over and over in the conditions that have prevailed in iron and steel markets for the past six months. The outstanding fact in the unusual developments so widely discussed in this eventful period is that while pig iron has steadily declined, finished steel products have gone week after week with substantially no change. As April opened the pig iron price curve was at its high point for 1923, THE IRON AGE composite for basic and foundry irons being $30.86. On Oct. 9, after a practically uninterrupted decline our pig iron composite stood at $23.79, representing a fall of $7.07 or close to 23 per cent.

On the other hand the changes in the finished material composite in the six months interval have been negligible. The average of the seven representative products chosen for our finished material composite—steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets—stood at 2.810 cents at the beginning of April. An advance in plain wire in the third week of April raised the figure to 2.824. On May 1, a reduction in bars from 2.50 cents to 2.40 cents Pittsburgh, restored the composite to 2.810 cents. A week later a reduction in No. 28 black sheets to 3.85 cents resulted in a composite of 2.789 cents and this in turn fell to 2.775 cents on July 24, on a further reduction in sheets to 3.75. And the 2.775 cent composite stands today, representing a change of but 1¼ per cent from the 2.810 cents of six months ago.

The two composites—one for pig iron and one for finished steel products—give an exact picture of what has taken place in the market—a considerable decline in pig iron, that has been the comment of the trade, and a practically stationary market for rolled steel, that has been equally a matter of comment for the contrast in the conditions governing the two classes of product.

A composite price made up of pig iron, semi-finished steel and finished products has been no index to what has happened in the steel market in this important period—nor to what has happened in pig iron, for that matter. It has shown a practically uninterrupted decline in iron and steel, giving no idea of the extent of the pig iron decline and entirely misrepresenting the stabilizing influences that have been so marked in the products of the rolling mill.

Substitution in Fuels

On account of the great increase in the rate of petroleum production in the last year the question has been raised whether oil may be substituted for coal to such an extent as to equalize matters. The coal situation has been such that any suggestion of getting away from coal is favorably considered. On account of production of the three fuels, coal, petroleum and natural gas being reported in their own units, tons, barrels and cubic feet, a direct comparison of fuel values requires reduction to a common standard, and a statement of the relative importance of production of the three fuels at the present time may be of interest.

During the first eight months of 1922 production of petroleum ran quite steadily at about 1,500,000 barrels a day. Then began a steady ascent, until a rate of 2,104,742 barrels was reached last July. August showed an increase, but only to a 2,119,871 barrel rate. The Geological Survey remarks, in making the report for August: "It is noteworthy, after many months of rapidly increasing production, that the rate of increase materially slackened." Ups and downs in oil production, fears of scarcity and dangers of overproduction, have alternated, and thus it may be that oil will take care of itself. However, oil produc-

tion at two million barrels a day may be taken as a basis of study.

Production of coal in the first nine months of this year has been 413,435,000 net tons of bituminous and 71,264,000 net tons of anthracite. Bituminous coal stocks increased 20,000,000 tons from Jan. 1 to Sept. 1, and of course anthracite accumulated, but it will do no harm to take this year's coal at one-third greater than the nine months' actual production, or at 646,000,000 net tons.

Production of natural gas this year may be estimated roughly at 750 billion cubic feet.

At 14,250 B.t.u. per pound of coal, 6,000,000 per barrel of petroleum and 1,025 per cu. ft. of natural gas, the heat units in these fuels would compare as follows, the thermal units, in first column, being in trillions:

	B.t.u.	Per Cent.
Coal	18,400	78.1
Oil	4,380	18.6
Gas	770	3.3
	23,550	100.0

Oil, of course, will go farther in replacing coal than the heat unit comparison would indicate, because more of the heat can be utilized. Even at that it is seen that a relatively small reduction in the use of coal would represent a relatively large increase in the use of oil. By the heat unit comparison, to make up for a 10 per cent decrease in coal would require a 42 per cent increase in oil.

The future of oil production and the future of coal marketing both present great uncertainties, but they are of quite different character, and the consumer therefore may choose with which group of uncertainties he will take his chances. Naturally substitution of oil for coal occurs more readily at points far removed from coal mines.

The Machine Tool Meeting

Concrete indications of continued increase in consumption of iron were supplied by the machine tool builders' meeting last week. Several pictures were sketched of mechanisms for labor saving and efficiency promotion where there are none now and of better devices to replace those that exist. The movement will be noteworthy with the railroads, if President Kearney is a prophetic observer, and sooner or later it will take up the present slack in machine tool capacity. It is not new to expect an ever mounting per capita consumption but it is uncommon to have such reassuring hints of specific forms which it will take.

Bearing on the displacement of hand labor by mechanical appliances is the contention of Thomas A. Stroup of the Utah Fuel Co., that mechanicalization might well be pursued as a means of making the wage earner happy. At present it is merely a route to cost reduction, without recognizing that it may also be used to relieve the less competent of sustained demand for initiative, judgment and responsibility. Mr. Stroup, in a survey prepared for the American Institute of Mining and Metallurgical Engineers, goes so far as to suggest it as a cure for the ills of unionism, arguing that it has proved one factor toward destroying unionism in the metal mines and would be effective also in righting the situation in the coal mines. Whether it would have this two-fold result or not, the trend toward replacing hand labor and multiplying its power is clearly continuing and the engineering industries are bound to be busy as a result.

As a means of accelerating such movements, the trade association has no small place. Undoubtedly the address of President Kearney will help bring about railroad improvements in so far as the railroad executive grasps the conditions which govern machine tool building and at the same time appreciates, as his mechanical department does, the highly developed equipment provided for railroad needs. Trade associations have done little to educate their buying clientele as a whole. Much needs to be done in dispelling erroneous views and in developing mutual rather than diverse interests of the buying and selling groups.

CORRESPONDENCE

The Wealth of "the Rich"

To the Editor: The editorial upon the above subject, appearing on page 912 of your issue of Oct. 4, concludes as follows: "They (the deductions of Dr. Ingalls) constitute a powerful refutation of the dangerous fallacy that is now influencing the minds of many of our people."

I fully realize the existence of the "dangerous fallacy," and I wish that Dr. Ingalls's conclusions and his undoubtedly competent correction of the figures themselves could be made to carry the refutation so greatly to be desired. You refer to the Western agrarian slogan of "Soak the Rich," based upon a belief "that 2 per cent of the people of the United States own 65 per cent of the wealth," which belief has become a commonly asserted argument for the so-called radical legislative program.

In correcting the heretofore uncontroverted statement contained in the report to Congress referred to, Dr. Ingalls has accomplished a most difficult and a most important task. In the interest of exactness, in the correction of important statistics, it certainly is of high value that so glaring an error should have been revealed; the stated 65 per cent falling gradually, as Dr. Ingalls's article proceeds, until from stage to stage it finally establishes itself at 30 per cent.

Evidently, however, the Farmer Laborites, the LaFollettes and the Brookharts, are not resting their right of attack upon corporations and wealthy persons upon mere mathematical, mere statistical accuracy, but upon the underlying claim itself, which is that an immense, an entirely disproportionate amount of the wealth of the country is actually in the possession of an insignificantly small number of individuals.

Now, as to this one basic and fully admitted fact, what does it matter whether this amount is 30 per cent of the wealth of the country (Dr. Ingalls's minimum) or 46 per cent (his maximum) or the 65 per cent of the incorrect Government report? The quarrel is that these few individuals have no business to have these immense possessions, quite out of proportion to the holdings of the people as a whole; as to which it would seem likely that Dr. Ingalls's article, now robbing the subject of all manner of doubt, may be employed as furnishing the final proof of these claims and as justifying the conclusions based thereon.

What has been done is to correct the figures. The facts themselves, the possession of a huge proportion of the wealth by a very few persons—these things,

whether right or wrong, whether expedient or inexpedient, whether justifiable or unjustifiable, remain unchanged. The various questions which they involve can only be solved as the result of broad study and of wide experience; and with the doctors of economic science themselves at the very poles of difference, little surprise need be felt at the vagaries characterizing the views of our political demagogues, some of whom—unless I quite miss my guess—will be found triumphantly flaunting Dr. Ingalls's article as constituting complete vindication of their platform.

Chicago, Oct. 8. FRANK J. LLEWELLYN.

A. H. Cordery's Long Service with the Phoenix Iron Co., Philadelphia

A. H. Cordery, who has just retired from the Phoenix Iron Co., Philadelphia, after 54 years and six months of active service, started with the company as a telegraph operator in March, 1869, and for the past 20 years had been general manager of sales. In an interview with a representative of THE IRON AGE Mr. Cordery chatted interestingly of his early days in the iron and steel business.

A. H. CORDERY

"When I became associated with the Phoenix Iron Co., through being employed as telegrapher on the private wire connecting the works at Phoenixville with the main office at Philadelphia, there were no steel shapes except rails and not many of those," said Mr. Cordery. "Rolled iron was used for rails, shapes and plates, and the principal producers were located along the Atlantic Coast, the Phoenix Iron Co. being the largest producer.

"In 1869, when I started, the main production of the company was bar iron, although shapes were beginning to be an important factor, and as the use of shapes for building and ship construction increased, the bar business became less and less a factor, until the company finally ceased making anything but structural shapes, which is now its only product.

"During these changes, I had left the telegraph desk to take charge of bar sales, and started out in 1881 to establish personal connections with our trade; rather an unusual thing at that time. The distribution of rolling mill products was generally through merchants, but the increasing use of structural shapes and the unfamiliarity of dealers with the technical questions involved, necessitated closer relations with the consumers, opening a new field for the salesman. The center of business in my early career was at Philadelphia. Prices were based on Philadelphia, but later moved to Pittsburgh.

"Of the many changes in methods of doing business, I do not know of any more radical than in transportation. The last order for rails filled by Phoenix will indicate our ancient methods. This order was loaded on canal boats at Phoenixville, brought through the Schuylkill River Canal to the Delaware River below Philadelphia, up the Delaware River to Bordentown, through the Delaware and Raritan Canal to New Brunswick, N. J., down the Raritan River to Newark Bay, through Kill Von Kull to the Hudson and up the Hudson to Albany, taking about two weeks.

"The Southern States were large consumers of rails, and many of the rails torn up by the Union troops in the 'march to the sea' came from Phoenixville. In the early days of iron shipbuilding, most of the shapes came from Phoenixville, but when steel came into use, this business as well as other lines rapidly centered in Pittsburgh."

EIGHT HOURS IN GERMANY

August Thyssen Writes Judge Gary the Short Day Has Not Been Satisfactory

August Thyssen, of H. Thyssen & Co., Mülheim-Ruhr, one of the leading steel masters of Germany, has written a letter to Judge Elbert H. Gary, chairman United States Steel Corporation, giving his views in regard to the 12-hr. day, especially in connection with the change from the 12-hr. to the 8-hr. day in this country. His letter is as follows:

Mülheim-Ruhr, Sept. 10, 1923.

Dear Mr. Gary:

I duly received your kind lines of July 23 and thank you sincerely for the submitted report on the 12-hr. day containing the letter exchanged with the President and your interview with the representatives of the newspapers.

The contents were of great interest to me. After the 8-hr. day had been introduced in Germany—about five years ago—we had some experience with it. The formerly-made assertion that in eight hours without intervals the same production would be secured as in 12 hours with intervals—where after deduction of the intervals still 10 hours are left—has not proved to be correct, and therefore the cost was increased considerably. If you estimate this increase of cost at 15 per cent this would be rather too low than too high. Exact statements on his point we cannot make yet, as since the introduction of the 8-hr. day we have not worked again under normal conditions.

On a former occasion I once said that, if the workmen found the 8-hr. day to be their ideal, I certainly would not take from them their ideal, but I observed at the same time that we must clearly understand that in these eight hours the work had to be done very intensely and that at all events the production must be greater than formerly, especially in the conditions under which we live today in Germany.

I further pointed out that it could not generally be done with the 8-hr. day, for even while I might understand the eight hours for the heavy work before the furnaces, it could not be justified for light work. Levelling of work or labor in that unreasonable way as it was done in the last years cannot be maintained and every judicious workman will agree that when a furnace man works eight hours, those who do lighter work will not be entitled to work also only eight hours.

What the clergyman has written you that the industrious workman will nevertheless work not less than formerly, has found its confirmation here. The men who are industrious do not like to be idle after having finished the 8-hr. shift; therefore they do afterwards still other work, in their profession or otherwise, and so they work indeed more than eight hours every day. The people who are satisfied with the eight hours' work for the day are just those who are not industrious and zealous, or youngsters who are used to wasting their time and money only on pleasure or useless trifles. Of course, nothing shall be said against recreation, so far as it is done in reasonable bounds.

Whether the whole will be of advantage for the training up of an efficient and reliable new generation is at any rate very doubtful. Though I may imagine that the shorter work-day may mean advantages, especially for the hygienic and moral conditions of the working people, I am not sure whether these advantages will be greater than its disadvantages; on the contrary, as far as my observation goes, the disadvantages are prevailing.

Believe me to be, dear Mr. Gary,

Cordially yours,
AUGUST THYSSEN.

Hon. E. H. Gary,
71 Broadway,
New York.

The Ford Motor Co., Detroit, has commenced the erection of a Piron twin coke oven at its River Rouge plant for the manufacture of steam coke. This plant will have a capacity of 1000 tons per day. The Ford company has completed its sintering plant which will be placed in operation this month.

JAPAN FORMS BUYING BOARD

To Plan Rebuilding and Buy and Sell and Settle Claims—Large Inquiries Current

NEW YORK, Oct. 9.—Trade with Japan is still quiet, but fairly heavy purchasing of galvanized sheets, plain and corrugated, from British mills is reported and the Imperial Government machinery is rapidly operating toward a systematic scheme of reconstruction in the areas devastated by the earthquake. On Sept. 22, the "Emergency Supply Act" was adopted, permitting the Government to enter into the buying, selling, exchanging and stocking of foodstuffs, building materials, etc., in the devastated areas. This act permits the Government to purchase materials directly from the manufacturer or through properly accredited sources. This was the preliminary step toward organization of the "Metropolitan Reconstruction Board," Sept. 27, headed by Viscount Goto, Minister of State, under the supervision of Viscount Yamamato, the premier. The board includes two vice-chairmen and about 660 staff members. It is divided into seven separate bureaus: Secretarial division, division of material purchase and supply, civil engineering division, architectural division, divison of designing and drafting, divison of land claims adjustment, and division of finance and accounting.

An ordinance providing severe penalties for profiteering, designed to curb speculation, has been adopted. Officials and others in close touch with Japanese affairs believe that purchasing, although in the aggregate large, will probably be spread over many months. On the other hand, a fairly large immediate business is evidently developing, if judgment is based upon the reported inquiry for 60,000 tons of plain and corrugated sheets, galvanized, and 7000 metric tons of wire nails of miscellaneous sizes. A report from Washington states that favorable replies have been received from iron and steel manufacturers on this emergency inquiry, which was put out through the Japanese Embassy with the cooperation of the Department of Commerce. Responses made by producers indicate that they will be able to deliver this material quickly, once the contracts are placed. The Japanese Embassy has also issued an inquiry for large consignments of lumber. These requirements are for immediate purposes and will be followed by much greater inquiries for the rebuilding of the devastated areas.

The emergency galvanized sheet tonnage is to be divided equally between plain and corrugated material and calls for Nos. 28 and 30 gage. It is estimated that the order for these sheets, together with the nails, will involve between $8,000,000 and $9,000,000. Inquiries were sent to the trade through the Department of Commerce, each producer being asked what proportion of the total requirements he was willing to bid on. Secretary of Commerce Hoover specifically stated that the department would have nothing whatever to do with prices or terms of the sale.

In connection with this purchase of material it is rumored that a purchasing board will be formed, made up of importers in New York. Official representatives of the Imperial Government state that they have no knowledge of such an arrangement, which, according to one report would be a buying syndicate made up of five Japanese export houses: Mitsui & Co., Mitsubishi Shoji Kaisha, Suzuki & Co., Takata & Co. and Iwai & Co. In fact officials are inclined to consider the report as without foundation, as, it is pointed out, any such arrangement would lead to untold complications.

"The fact that American steel and concrete buildings suffered practically no loss from the earthquake will be of immense significance in the future building program of the downtown sections of Tokio," says F. R. Eldridge, Jr., chief of the Far Eastern Division of the Department of Commerce in a recent bulletin. "The question whether Yokohama will be rebuilt seems now to be under consideration by the committee of 47 business men appointed by the newly created Japanese Ministry of Reconstruction on Sept. 8, and the question undoubtedly will be decided ultimately by the relative expense of dredging a channel from the present Yokohama harbor to a suburb of Tokio, some 10 or 15 miles distant, as compared with the value of land and of property not destroyed in Yokohama. It is probable that the interests, particularly those shipbuilding concerns and factories, iron works, etc., which escaped damage in Yokohama may oppose such a move, but an engineering problem of such proportions as this must receive the most careful consideration."

Mr. Eldridge states that judging from the methods pursued in the past, it would not be surprising were a huge purchasing syndicate formed under the auspices of the Japanese Government to which would be intrusted the whole question of providing the Ministry of Reconstruction with materials for rebuilding and repairing damaged machinery, equipment and public works. If a purchasing syndicate should be formed, says Mr. Eldridge, advantage would undoubtedly be taken of the opportunity to purchase machinery in the United States and other foreign countries under the agency arrangements of such firms as Mitsui & Co., Takata & Co., etc., already established with American manufacturers.

On the whole, Japanese trade at present, exclusive of the direct inquiry for reconstruction purposes, is beginning to resume a normal appearance. Inquiries continue for wire nails, some galvanized wire, light gage black sheets, 13 and 27 to the bundle, tin plate and rails. The tender for rails is from Kobe municipality and calls for bids on six miles of 91-lb. or 93-lb., high T grooved rails and one mile of 122-lb. sections of high T, grooved rails, bids opening Oct. 16.

Iron Ore Beneficiation

A comprehensive study of the problem of iron ore beneficiation has been undertaken by the Department of the Interior, at the Southern Experiment Station of the Bureau of Mines, Tuscaloosa, Ala. The first part of this work consisted in the compiling of a list of the companies doing work of this nature. A survey was started in the Birmingham district by Oscar Lee, assistant metallurgist. The purpose of this survey is to acquire information regarding all the plants in operation, as well as others which have been abandoned. It is believed that such information will furnish data from which it will be possible to determine what might be expected in the future from new methods. Definite information regarding the success of any particular type of machine or method of beneficiation will be available and it will be possible to summarize the work which has been done throughout the country in this connection. This work was transferred from the North Central Station of the Bureau of Mines, Minneapolis, to the Southern Experiment Station, at Tuscaloosa, on July 1.

Effective Oct. 1, the Replogle Steel Co. has discontinued operations at its Scrub Oak iron ore mines, near Dover, N. J., throwing approximately 250 men out of work. The property was opened a few years ago, when the company took over the Wharton blast furnaces, and this is the first actual shut-down at the property; no indication has been given as to how long the curtailment will continue. The Empire mine at Oxford, near Wharton, is also inactive, having been closed down by the company a number of weeks ago.

Detailed requirements of the railroads for locomotives, cars, rails and other facilities for the next ten years were made the basis of the discussion of the Committee on Government Relations of the Chamber of Commerce of the United States, which met in Washington last Thursday to consider the final draft of its report. The committee is dealing with problems involved in securing the development and expansion of railroad facilities that will be needed to handle the enlarged traffic expected in the next decade.

The Durant Motors, Inc., has adopted an 8-hr. day, 44-hr. week operating schedule at its main works at Elizabeth, N. J.

Germany Quotes in Gold Marks

Prices Twice and Three Times Pre-War Level—Release of Ruhr Stocks Not Considered a Menace—Industry Depressed

BERLIN, GERMANY, Sept. 24.—In the Ruhr the French lately began moving heavy iron, particularly stocks seized from the Hoesch, Phoenix and Rhenish Metal corporations; but large stocks, produced early in the occupation, remain. The Essen Bergwerks-Zeitung estimates the stock of unsold pig iron and steel at 1,750,000 metric tons. France's claim to have removed 700,000 tons of iron is obviously exaggerated. As the demand for iron and steel in unoccupied Germany is great, the cessation of the Ruhr export embargo is not expected to cause any over-supply or to affect prices materially.

Although depression in the heavy iron and steel industry seems to be made impossible by the chronic under-production, conditions are worse with the finishing mills. The chief factor seems to be the adoption of gold prices and gold wages. Unemployment is increasing. The latest report of the Iron and Steel Wares Association of Elberfeld shows that in the Solingen steel district alone there are 20,000 unemployed, which is about the same number as in all Germany in September, 1922. The Solingen district has been completely isolated, no material leaving the works. World-market prices are exceeded. In the Hagen district conditions are worse and several hundred concerns have suspended operation. Practically no domestic orders are received, and export is checked by the high production costs. In the Schmalkalder district many shops are working only two days a week. Nearly all companies have adopted the dollar or pound sterling for calculation. Conditions in the machinery industry have everywhere grown worse. Orders are not being received; wages and the cost of raw materials and coal are high; and sometimes where there are still unfilled orders materials cannot be obtained. In all these branches of industry hope of recovery is based upon the reestablishment of stable currency. It is now realized that with the introduction of gold calculation the bounty given to industry by the declining paper mark was bound to disappear.

The pig iron syndicate and the steel syndicate are both quoting in gold prices. Before September the system pursued was to quote basic paper mark prices on the assumption of a given dollar or sterling exchange, and to alter the basic paper mark prices in proportion to subsequent exchange movements. Today, with prices directly quoted in gold, paper mark payments are made on the basis of the paper mark's gold value on the date of payment. The steel syndicate quotes in gold marks, whereas pig iron prices are quoted in sterling. The following table shows the steel syndicate's new gold mark rates, and its rates of July, 1914, both per metric ton:

	Sept., 1923 Gold Marks	July, 1914 Gold Marks
Ingots	165.90	82.50
Blooms	189.60	87.50
Billets	202.40	95.00
Slabs	210.10	97.50
Structural forms	239.20	110.00
Bars	240.00	97.00–99.00
Bands	299.10	105.00
Wire rods	254.30	117.50
Sheets:		
5 mm. and heavier	270.50	105.00
3 to 5 mm.	302.20	110.00
1 to 3 mm.	359.40	125.00
Less than 1 mm.	400.10	Not quoted

Foundry iron No. 1 is quoted at 122s. 6d.

Gold prices of iron and steel are now from 100 to nearly 300 per cent higher than pre-war. This is largely a result of the enormous increase in the price of coal, partly because of the 30 per cent coal tax. On Sept. 17, when coal prices were put on a gold basis, the rate per ton, including tax, was 28.08 gold marks, or about 125 per cent higher than the pre-war price of about 12.50m. Foundry coke is 42.70 gold marks, against 20 marks before the war. Prices of metals and coal are relatively much higher than most other commodities. The price policy of the steel and iron producers and of the foundries is being severely attacked, particularly by the machine and sheet industries and by street railroads and private railroads.

Because of the Ruhr occupation, foreign trade figures are imperfect. The latest are for July, and these give no values. July shows a slight recovery in exports of rolling-mill products, general iron wares and machines. Exports of rolled materials and iron wares were 69,793 metric tons, against 59,171 tons in June, and a monthly average of 193,015 tons in 1922; machine exports were 27,622 tons, against 18,247 tons in June and a monthly average in 1922 of 39,914 tons. As a result of the depressed condition of the steel making plants, exports of scrap have increased and imports decreased.

The rise in gold prices has compelled the Government to institute measures for fostering export. The whole system of foreign trade control is in course of liquidation. From Sept. 27 goods which have hitherto been on the export-prohibition list, which means exportable only under license, may be exported freely without license. Exceptions are foodstuffs, raw materials and certain semi-finished materials in which domestic manufacturers are particularly interested. In carrying out the currency reform, imports will be restricted by imposing duties on products which are at present duty-free and increasing the tariff on other goods. This measure will apply mostly to luxuries or semi-luxuries.

Decrease in Steel Plant and Mill Activity in the Mahoning Valley

YOUNGSTOWN, Oct. 9.—Steel making and finishing mill operations in the Mahoning Valley are on a somewhat reduced basis this week, as compared with the week before.

The Youngstown Sheet & Tube Co. has reduced the number of active open-hearth furnaces from 20 to 14, and the number of sheet mills from 21 to 14. The Republic Iron & Steel Co. has placed its plate mill on the inactive list. The Sharon Steel Hoop Co. has reduced the number of sheet mills from seven to five. Of 120 sheet mills in the Valley, 76 were scheduled this week, as compared with 83 the week previous.

The A. M. Byers Co., Pittsburgh, is operating 80 of its 88 puddle furnaces at Girard, Ohio, representing a high point in recent schedules. Its blast furnace is now undergoing repairs and will be cold for at least six weeks longer.

The Sheet & Tube company is operating six of its nine stacks in this district, and the Republic company four of six. The Carnegie Steel Co. has the blast on six furnaces at the Ohio Works.

The Trumbull Steel Co., Newton Steel Co. and Falcon Steel Co. are operating at a rate close to normal.

Manufacturing consumers of steel products are likewise operating at a rate near normal.

The photographic department of the Youngstown Sheet & Tube Co., Youngstown, has now on file nearly 10,000 negatives, illustrating every operation in the plant, every stage of construction of important units, most of the company's housing units and many other things of interest and value as visual records. The department serves almost every department of the company, including medical, engineering, safety, legal, publicity and others.

Iron and Steel Markets

CARS AND RAILS

Prospects of Large Purchases Promising

Current Steel Bookings on Increase—Improvement in Operations—Foundry Iron Lower

The appearance of the largest railroad car inquiries that have come out since the early months of the year has produced a more cheerful view of steel market prospects. Leading steel producers at the same time report bookings of finished material for the first week of October at a rate slightly better than the September average.

Operations by the Steel Corporation are at 93 per cent of capacity in the Chicago district and at 88 per cent for the Carnegie Steel Co., with an average close to 90 per cent. Independent companies in the Pittsburgh, Youngstown and Wheeling districts are still running at 70 to 75 per cent.

The better outlook for railroad buying is dwelt on, because present steel prices have been considered too high to encourage contracting on a large scale. It remains to be seen what concessions will be made to the car makers and what economies the latter can enforce to keep their prices within bounds.

The Southern Pacific has led off with an inquiry for 8730 freight cars, 152 passenger cars, 58 locomotives and 5000 refrigerator cars. For the Union Pacific, also, large purchases are planned. The St. Louis & San Francisco is in the market for 2500 cars and the B. & O. for 1400, and the Chesapeake & Ohio inquiry may reach 4000. All told, the steel trade expects soon to have before it plate and other requirements for a total of 40,000 cars.

Rails already booked and those in sight will make a large draft on rail mill capacity for the first half of 1924. Estimates of the Pennsylvania Railroad's coming orders run as high as 200,000 tons, or one-third more than the 1923 total.

It is still difficult to take the measure of Japanese buying. The 60,000 tons of galvanized sheets and 7000 tons of wire nails for which inquiry has been taken up through Washington are considered emergency needs. Structural steel demand on any scale is some distance in the future. The sheets wanted are of thin gages and not commercially attractive to the mills.

Broadly speaking, the immediate demand for plates, shapes and bars is about what it has been —shipments being well in excess of new business. Steel pipe and tinplate are still the lines of largest activity, with wire products a fair second, while sheets are weaker. Concessions beyond the 3.75c. that has been available for some time are now reported.

Steel production held up better in September than was indicated by the 6.5 per cent falling off in the pig iron output of the steel companies. At 3,313,000 tons for 25 working days, the September steel rate was 132,534 tons a day, or only 2.7 per cent less than the daily rate of 136,214 tons in August. Pig iron and steel alike have now fallen off 16 per cent from the peak production rate of last spring.

Low prices have led to considerable pig iron business in the Buffalo district, where $23 has been shaded, but at Chicago, where prices are down $1 further and in other centers where added weakness has appeared, buying has been limited to rather small tonnages. Southern iron is selling at Chicago on a basis of $20, Birmingham, but $21 is still regarded as the ruling quotation in other centers. In eastern Pennsylvania no further reductions have developed, but the market is unsettled. Competition has grown stronger in New England between New York and eastern Pennsylvania furnaces.

Lake shipyard prospects are more promising. Inquiries have been received for two or three freighters, following those for two boats for the Canadian National Railways and orders for two boats for the Ford company.

Bookings of fabricated steel work, amounting to 13,000 tons, are under the weekly averages of August and September, but fresh inquiries at 23,500 tons are the largest in two months.

On plates for the Big Four railroad a Cleveland mill quoted 2.385c., Pittsburgh.

The Cockerill and Ougrée Marihaye works of Belgium have divided a 45,000-ton rail order from Argentina, and the latter company has booked 15,000 tons for Spain.

For 25 weeks or nearly one-half a year, THE IRON AGE finished steel composite price has shown but one change, and that of 28c. a ton. For 12 successive weeks it has remained at 2.775c. per lb., following 13 weeks at 2.789c.

The further decline in foundry iron brings THE IRON AGE pig iron composite price to $23.79, from $23.96 last week. This is the lowest figure since mid-July of 1922.

Pittsburgh

Moderate Improvement in Some Lines, But Still Much Conservatism

PITTSBURGH, Oct. 9.—While business in steel shows improvement in some lines, notably in wire products, and as far as the Steel Corporation is concerned, in plates, general demand still reflects much conservatism on the part of consumers. There is not much doubt that the heavy purchases of the fore part of the year exceeded actual requirements and consumers now are well able to get along with the tonnages still due them on old orders supplemented by very moderate new purchases. The dominating thought of users of steel is to get their inventories down.

The idea is so common that the next change in prices will be down, that this also is a factor in the demand. The Steel Corporation sold much further

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 9, 1923	Oct. 2, 1923	Sept. 11, 1923	Oct. 10, 1922
No. 2X, Philadelphia‡	$24.76	$24.76	$26.26	$33.14
No. 2, Valley furnace†	*24.00*	24.50	25.00	32.50
No. 2, Southern Cin'ti†	25.05	25.05	27.55	31.55
No. 2, Birmingham, Ala.†	21.00	21.00	23.50	27.50
No. 2 foundry, Chicago*	*25.00*	26.00	27.00	32.00
Basic, del'd, eastern Pa	*24.50*	25.00	25.00	29.50
Basic, Valley furnace	24.00	24.00	25.00	31.00
Valley Bessemer, del P'gh.	27.26	27.26	28.26	35.27
Malleable, Chicago*	*25.00*	26.00	27.00	32.00
Malleable, Valley	*24.00*	24.50	24.50	32.00
Gray forge, Pittsburgh	*25.26*	25.76	25.76	33.77
L. S. charcoal, Chicago	30.04	30.04	32.15	36.15
Ferromanganese, furnace	110.00	110.00	112.50	67.50

Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	40.00	40.00	42.50	40.00
O.-h. billets, Pittsburgh	40.00	40.00	42.50	40.00
O.-h. sheet bars, P'gh	42.50	42.50	42.50	40.00
Forging billets, base, P'gh.	47.50	47.50	47.50	45.00
O.-h. billets, Phila	45.17	45.17	47.67	45.17
Wire rods, Pittsburgh	51.00	51.00	51.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.40	2.40	2.40	2.00
Light rails at mill	2.15	2.15	2.15	2.25

Finished Iron and Steel, *Per Lb. to Large Buyers:*	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.67	2.67	2.67	2.475
Iron bars, Chicago	2.35	2.35	2.40	2.50
Steel bars, Pittsburgh	2.40	2.40	2.40	2.00
Steel bars, Chicago	2.50	2.50	2.50	2.10
Steel bars, New York	2.74	2.74	2.74	2.44
Tank plates, Pittsburgh	2.50	2.50	2.50	2.15
Tank plates, Chicago	2.60	2.60	2.60	2.30
Tank plates, New York	2.84	2.84	2.84	2.49
Beams, Pittsburgh	2.50	2.50	2.50	2.00
Beams, Chicago	2.60	2.60	2.60	2.20
Beams, New York	2.84	2.84	2.84	2.44
Steel hoops, Pittsburgh	**3.15**	3.00	3.15	2.90

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire, *Per Lb. to Large Buyers:*	Oct. 9, 1923 Cents	Oct. 2, 1923 Cents	Sept. 11, 1923 Cents	Oct. 10, 1922 Cents
Sheets, black, No. 28, P'gh.	3.75	3.75	3.75	3.50
Sheets, galv., No. 28, P'gh.	5.00	5.00	5.00	4.50
Sheets, blue an'l'd, 9 & 10	3.00	3.00	3.00	2.60
Wire nails, Pittsburgh	3.00	3.00	3.00	2.70
Plain wire, Pittsburgh	2.75	2.75	2.75	2.45
Barbed wire, galv., P'gh.	3.80	3.80	3.80	3.35
Tin plate, 100-lb. box, P'gh	$5.50	$5.50	$5.50	$4.75

Old Material, Per Gross Ton:				
Carwheels, Chicago	*$18.00*	$19.00	$20.00	$25.00
Carwheels, Philadelphia	20.50	20.50	21.00	23.00
Heavy steel scrap, P'gh.	*16.00*	16.50	18.00	21.50
Heavy steel scrap, Phila.	16.00	16.00	17.00	18.00
Heavy steel scrap, Ch'go.	*14.15*	15.00	16.50	18.50
No. 1 cast, Pittsburgh	*20.00*	21.00	22.00	24.00
No. 1 cast, Philadelphia	*19.50*	20.50	21.50	23.00
No. 1 cast, Ch'go (net ton)	19.00	19.00	20.00	21.00
No. 1 RR. wrot. Phila.	19.00	19.00	19.00	23.00
No. 1 RR. wrot. Ch'go (net)	*14.00*	14.50	16.00	18.25

Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$4.00	$4.00	$4.50	$11.00
Foundry coke, prompt	*4.75*	5.00	5.75	13.00

Metals, *Per Lb. to Large Buyers:*	Cents	Cents	Cents	Cents
Lake copper, New York	*13.00*	13.75	14.12½	14.12½
Electrolytic copper, refinery	*12.75*	13.00	13.62½	13.75
Zinc, St. Louis	6.30	6.30	6.55	6.62½
Zinc, New York	6.65	6.65	6.90	6.97½
Lead, St. Louis	*6.65*	6.70	6.72½	6.35
Lead, New York	*6.85*	7.00	7.00	6.60
Tin (Straits), New York	**42.25**	41.87½	42.12½	33.50
Antimony (Asiatic), N. Y.	7.50	7.50	7.50	6.75

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price Oct. 9, 1923, Finished Steel, 2.775c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets — These products constitute 88 per cent of the United States output of finished steel

Oct. 2, 1923,	2.775c.
Sept. 11, 1923,	2.775c.
Oct. 10, 1922,	2.460c.
10-year pre-war average,	1.689c.

Composite Price Oct. 9, 1923, Pig Iron, $23.79 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

Oct. 2, 1923,	$23.96
Sept. 11, 1923,	25.29
Oct. 10, 1922,	30.94
10-year pre-war average,	15.72

ahead than did the independents when demand was active and now has a much heavier order book than its competitors. The real sustaining influence in prices is the increased labor cost incident to the elimination of the long work day. While the extent of the effect of this change cannot, of course, be accurately stated until the 12-hr. day is entirely a thing of the past in the industry, it is probably large enough to prevent price cuts that would bridge the gap between current quotations and the present invoice prices on much of the Steel Corporation shipments. It is fully realized that prices above those now prevailing on the steel now going to buyers would not be attractive to them.

The past week has brought no important price changes by mills in this and nearby districts, aside from the fact that there seems to have been a pretty general withdrawal of prices below 3.15c., base, for hot-rolled flats. The sheet market is softer in tone and while there have been no definite price reductions, there is not much doubt that need of orders, particularly for black sheets, is more pressing. Concessions from regular quotations not only are more frequent, but embrace practically all finishes. Hitherto, price cuts have been chiefly in black sheets. It is still a buyers' market on bolts, nuts and rivets, and observance of the regular base on cold-finished steel bars no longer is very rigid. Boiler tube prices also are soft and the disappearance of recent low prices for hot-rolled flats is looked upon in some quarters as temporary, since there is not enough business to give all producers a share.

There has been no definite turn for the better in the situation in the primary materials. Indeed, a further drop of 50c. a ton is noted in foundry and malleable iron, and quotations on the steel-making grades appear to be what producers are trying to get rather than what customers are willing to pay. There is practically no outlet for the scrap iron and steel coming upon the market, and prices have continued to seek lower levels. The demand for coal and coke is so limited that sales are difficult even at prices well below producing costs. The Carnegie Steel Co. is operating at about 88 per cent of its ingot capacity, which compares with from 70 to 75 per cent, the common rate on steel works operations by independent companies in the Pittsburgh-Youngstown district.

There has been no particular change in active blast furnace lists in the past week. The Jones & Laughlin Steel Corporation recently blew out its No. 1 Eliza furnace for repairs, but at the same time turned on the blast in its No. 1 Aliquippa furnace. The Bethlehem Steel Co. has six of its 11 furnaces at Johnstown in blast, five on pig iron and one on ferromanganese.

Pig Iron.—The market still is extremely dull and, as is usual in markets of that kind, reports of cut prices are very numerous. Definite facts, however, are not always available. There has been a decline of 50c. a ton in foundry grades with one sale of 2000 tons for delivery over the rest of this year noted at $24, Valley furnace, for No. 2. It is reported that there have been sales of this grade as low as $23.50, Valley furnace, but this can not be verified. The most recent business in standard basic iron was at $24, Valley furnace, or Valley furnace basis, and there has not been enough demand lately to determine how firm that price is. It is the common quotation, however, and probably will be observed until there is some evidence of interest in supplies on the part of melters. We also continue to quote the market on standard Bessemer iron at $25.50, Valley furnace, based on the most recent sales rather than upon the price ideas of those now seeking tonnages, some of whom claim to have had a lower quotation. Malleable iron is offered at $24, Valley furnace, but there have been no recent sales.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$24.00
Bessemer	25.50
Gray forge	23.50
No. 2 foundry	24.00
No. 3 foundry	23.50
Malleable	24.00
Low phosphorus, copper free	30.00

Ferroalloys.—Failure of British ferromanganese producers to meet prices recently done on resale British material and their reaffirmation of a price of $117.50 c.i.f. Atlantic seaboard, duty paid, appear to have steadied the general market on this product. Resale offerings of British material have disappeared and $110, Atlantic seaboard, now is the minimum price, this on domestic material, makers of which still are holding at that price. Not much business is being done in this district, as important consumers are covered for the remainder of this year and are not inclined to do much about their early 1924 requirements at the moment. It is admitted by some consumers that unless there is a material decline in manganese ore prices, the likelihood of a dip below $110 is slight. Spiegeleisen is offered as low as $42, furnace, for average 20 per cent material. Hardly enough is going on in 50 per cent ferrosilicon to clearly define prices. There is some talk of lower prices for Bessemer ferrosilicon and silvery iron. Prices given on page 1005.

Semi-Finished Steel.—Billets, sheet bars and slabs are quotable at the prices of a week ago. There seems to be a little more selling pressure in billets and slabs than in sheet bars and this shows in prices since all recent definitely known sales in sheet bars have been at $42.50, Pittsburgh or Youngstown, while billets and slabs have sold at $40 and still can be had at that price when the inquiry is of attractive size. Forging billets still are quoted at $47.50, base, but not much is going on and it is believed that less could be done on a sizeable tonnage. The market on skelp is not very firm at 2.40c., although local makers deny having gone below that price. Just a fair market for wire rods and on the small lots selling $51, base, still is the prevailing price. The Carnegie Steel Co. is operating at about 88 per cent of ingot capacity or more than 15 per cent above the general average of independent companies in this and nearby districts. Prices are given on page 1005.

Plates.—This product is looking better as far as the Steel Corporation is concerned, as, in addition to the 10,000 tons recently placed for the two lake steamers for the Ford Motor Co., it also will furnish the steel for two gas holders amounting to 6000 tons, and between 12,000 and 17,000 tons for a water pipe line for Portland, Ore., contract for which recently was awarded the East Jersey Pipe Co. Orders to independent companies have run generally in small tonnages and while some of them plainly need business to maintain profitable operations, all are holding firmly in price at 2.50c., base, Pittsburgh. Prices are given on page 1004.

Wire Products.—The more general report this week is of increased orders and at least one large independent maker here now has such a backlog that he cannot accept all prompt delivery business tendered. This is an exceptional case, however, as most manufacturers including the American Steel & Wire Co. can make prompt deliveries on practically all products except possibly manufacturers' wire. In a general way, buying is for the replenishment and rounding out of stock and forward buying is not especially conspicuous, as jobbers still are inclined to keep their inventories down as the end of the year draws near. There is close observance of quoted prices on the part of local mills. Prices are given on page 1004.

Steel Rails.—Light billet rails still are quotable from 2.15c. to 2.25c., base, the lower price applying on orders classed as desirable. Not many such orders are coming out and on small lots the common quotation is 2.25c., base. The soft coal market is so dull and depressed that there is no incentive for operators to fresh development work.

We quote light rails rolled from new steel at 2.15c. to 2.25c. base (25-lb. to 45-lb.); those rolled from old rails, 1.90c. to 2c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, $43 per gross ton mill, for Bessemer and open-hearth sections.

Tubular Goods.—Demand for standard pipe is as urgent as it has been for some time past and this product constitutes one of the really active spots in the market. Oil country goods still are slowing down and there is not much activity in line pipe, the oil companies evidently waiting for a time when the mills are badly enough in need of business to cut prices. Although reports from California indicate a falling off in the production of crude oil, the supply situation has not improved to a point that encourages expectations of an early revival of oil well pipe demand. Boiler tube makers are busier on old than new orders. There are continued reports of price concessions of boiler tubes, but shading of pipe prices is practically unknown. Discounts given on page 1004.

Sheets.—Orders are coming along fairly well, but the pressure of buyers for deliveries no longer is urgent and there are few mills which are passing up chances for business. The leading interest probably has a better order book than any of its competitors, but will have to have additional business to maintain its present rate of operation of about 85 per cent of capacity throughout the remainder of the year. There is an unmistakable tendency toward conservatism on the part of sheet consumers, who are more disposed to buy small tonnages frequently than to enter contracts for a long period. The market is holding fairly well on all finishes except ordinary black sheets and the weakness in that line does not yet appear to be extending to tin mill black plate. Reports emanating from brokerage circles have it that blue annealed sheets have been offered as low as 2.65c., base. Galvanized sheets out of mill stocks have gone as low as 4.75c., base, but concessions from regular quotations as a rule do not run over $2 a ton. Prices are given on page 1004.

Tin Plate.—Tin plate supplies for the remainder of the year are practically a closed book and interest is turning to 1924 requirements. There are no indications of an over pack of perishable foods this year and there are few of the container manufacturers who will carry much tin plate from this year into 1924. It looks as though next year would be another good one in tin plate and in the absence of any weakening as yet in tin mill black plate, the expectation is that the present price of $5.50 per base box, Pittsburgh, will be continued for the first quarter of next year. Prices for that period probably will not be announced until after the first of next month.

Cold-Finished Steel Bars and Shafting.—Buyers are confining their takings very close to their known re-

quirements and at the same time exerting much pressure against prices, and are meeting with some success in this direction, although makers here still insist that they are getting the full quotation of 3.25c., base. Chicago district makers several weeks ago went as low as 3c., base, Pittsburgh, to secure desirable accounts and it has since been rather difficult, particularly in large centers of consumption like Detroit to obtain full prices. There are no public quotations of less than 3.25c., base, but lower figures are being developed by definite offers. Ground shafting still is quoted at 3.65c., base, f.o.b. mill, for carload lots.

Iron and Steel Bars.—Mills in this territory still are holding to 2.40c., base, for steel bars, but are not finding orders either numerous or large and not much tonnage is moving east owing to lower prices by mills in that direction. Quotations on iron bars also are closely observed by makers in this district.

> We quote soft steel bars, rolled from billets, at 2.40c. base; bars for cold-finishing of screw stock analysis, $3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.25c. base, in carload lots or more, f.o.b. Pittsburgh.

Cold-Rolled Strips.—This product is steady in price, with enough business coming out to provide most makers with a reasonably high mill operation.

Hot-Rolled Flats.—Obtainable a week ago as low as 3c., base, Pittsburgh, hoops, bands and strips have stiffened to 3.15c. this week, through the withdrawal of the lower figure by those recently naming it and at which a fair amount of business was taken. This base applies on all gages and widths, with the usual differential for hot-rolled strips for cold-rolling and for rim stock, which are priced at 3c. The market is not especially active, buyers being inclined to purchase what they require rather than to enter long time contracts. Prices are given on page 1004.

Structural Material.—The market is very slow but there is no shading of prices. Fabricating shops in this district feel the decline in structural awards quite as much as those in other districts and, while several of them have sufficient old business to keep them fairly well engaged over the remainder of the year, they are fully covered on the steel required. Prices are given on page 1004.

Export Business.—Makers of wire products are having a good many export inquiries for nails and galvanized wire and are booking a very fair amount of business, although the individual sales are small. Inquiries for good sized tonnages of galvanized sheets for shipment to Japan still are coming out, but on account of the gage and size, few mills are at all eager for the business.

Bolts, Nuts and Rivets.—Makers are not yet filled up to a point where they can assume an independent position with regard to prices. Competition for orders still is pretty keen, and for spot or early shipment tonnages it is still necessary to name prices somewhat under what are regarded as the regular quotations. Prices and discounts are given on page 1004.

Track Fastenings.—Buying has not yet assumed the proportion it was expected to in view of recent heavy rail orders, and there is some irregularity in prices due to concessions being made by those most badly in need of orders. Prices are given on page 1004.

Coke and Coal.—The market still is quotable at $4 per net ton at ovens for standard furnace coke, but this is merely the price which producers are trying to get rather than what they might sell for if there was a demand. Furnaces in blast are covered against their fuel requirements for the remainder of the year, but current production greatly exceeds these needs and an outlet for the surplus is very hard to uncover. It is probable that a bid of $3.75 would be quickly snapped up. Although as high as $4.50 is asked for tonnages for shipment over the remainder of the year, it is probable that a firm bid of $4 would get attention. Spot foundry coke is quotable at $4.75 to $5.50 for selected grades, while there have been some offerings of unselected 72-hr. coke as low as $4. Heating coke is said to have gone as low as $3 for shipment East. There is so little demand for coal and so much available that prices are altogether of buyers' making. Mine run steam coal is quotable all the way from $1.45 to $2.25 per net ton at mine; mine run gas grade at $2 to $2.25, and coking coal from $1.85 to $2.

Old Material.—Melters still are largely out of the market, being disposed to use up present stocks before making fresh purchases. There is practically no place to put the material coming upon the market, since there are comparatively few short sales that remain uncovered and prices have not yet reached a level where dealers feel safe in throwing much tonnage on their yards. Difficulty of sales makes for continued weakness in prices. We again present prices that are merely appraisals based largely upon dealers' ideas. It is doubtful if the dealers would entertain bids from consumers as low as they are naming, but right now it would be difficult to sell at higher than the prices given. It is no secret that the desire of some dealers is to get prices down to a level that will make possible the averaging down of the cost of early September purchases, made in anticipation of a demand which never materialized. Heavy stocks of pig iron enable most of the steel companies to remain out of the market.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton
Heavy melting steel	$16.00 to 16.50
No. 1 cast, cupola size	20.00 to 20.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.00 to 18.50
Compressed sheet steel	14.50 to 15.00
Bundled sheets, sides and ends	13.00 to 13.50
Railroad knuckles and couplers	20.50 to 21.00
Railroad coil and leaf springs	20.50 to 21.00
Low phosphorus bloom and billet ends	23.00 to 23.50
Low phosphorus plate and other material	22.00 to 22.50
Railroad malleable	20.00 to 20.50
Steel car axles	20.00 to 20.50
Cast iron wheels	18.00 to 18.50
Rolled steel wheels	20.50 to 21.00
Machine shop turnings	12.50 to 13.00
Sheet bar crops	18.00 to 18.50
Heavy steel axle turnings	15.00 to 15.50
Short shoveling turnings	13.50 to 14.00
Heavy breakable cast	17.50 to 18.00
Stove plate	14.50 to 15.00
Cast iron borings	14.50 to 15.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	16.00 to 16.50

Proposed Reduction of Freight Rate on Billets Suspended

WASHINGTON, Oct. 9.—The Interstate Commerce Commission today announced the suspension from Oct. 10 to Feb. 7 of tariffs proposing reductions in rates on iron and steel billets from $1.65 to $1 per 100 lb. from the New York piers of the Southern Pacific Co. and the Atlantic steamship lines to points in Arizona, California and Mexico when routed by water to Galveston, Tex., and Southern Pacific Co. and subsidiary lines beyond. It was proposed in these tariffs to reduce the rate on billets as well as on other commodities to the same basis as is currently in effect from Chicago territory points to the same destinations by all rail routes.

The Wallace Barnes Co., Bristol, Conn., by way of announcing its selection, by invitation, to become a member of the Rice Leaders of the World Association, publishes an illustrated booklet tracing the development of its business through six decades of successful manufacturing. In October, 1857, the company began and its first product was a hoop-skirt frame. Not long after this, Wallace Barnes turned to the production of clock springs.

St. Louis building permits in September amounted to $5,592,630, as compared with $1,715,117, in September, 1922. Permits for the nine months of this year amount to $31,295,965, as compared with $17,060,560 in the same period of 1922 and $25,210,503 in all of 1922.

Chicago

Car Buying May Prove an Important Factor in Determining Prices

CHICAGO, Oct. 9.—New business in finished steel shows some slight improvement, but it is still true that shipments exceed current bookings and that the backlogs of the mills are steadily shrinking. At the same time, consumers continue to hold back their purchases in the expectation that prices will break, with the result that they are reducing their stocks almost to the vanishing point. The acid test of the market appears to be drawing near and it is not unlikely that the issue will be decided in favor of the buyer or the seller before the current month closes.

In this connection, it is interesting to note that railroad car buying, which has been negligible since the early months of the year, may prove an important factor in establishing the future trend of prices. The program of the Southern Pacific calls for 8730 freight cars, 5000 refrigerator cars, 78 electric cars, 74 passenger cars and 58 locomotives. The locomotives are now being figured on and inquiries for the cars are expected to be in the hands of builders shortly with the likelihood that orders will be placed before the close of the year. The Union Pacific is also expected to enter the market in a big way, while probable inquiries by the Pennsylvania are placed at 15,000 cars. The St. Louis-San Francisco is now asking for bids on 2500 refrigerator cars and the Baltimore & Ohio is taking figures on 1000 steel gondola cars, 440 hopper bodies and 107 box car bodies. Other important lines are known to be feeling out the market preparatory to issuing inquiries. At first glance, it might be thought that steel prices considerably higher than those of last spring might deter purchases of cars at this time. Car builders, however, are hungry for business, having discharged most of their old obligations, and are sharpening their pencils with a view to interesting the carriers in placing orders. It is also probable that they are again enjoying their usual preferential terms in placing tonnage business with the mills, so that the matter of material prices may not prove to be such an obstacle to equipment buying as might otherwise be expected.

The Illinois Steel Co. still has 23 active blast furnaces out of a total of 27 steel works stacks and is producing steel at the rate of 93 per cent of capacity. The Inland Steel Co. continues to operate all three of its blast furnaces with its steel works on a 75 to 80 per cent basis.

Pig Iron.—The market has shown further weakness, but melters are evincing increased interest in their requirements, indicating that they believe that prices are approaching bottom. Orders still call for early delivery, however, rarely exceeding 30 days. Sellers are making strenuous efforts to hold prices on Northern pig iron to $26 base, furnace, but inquiries for sizable tonnages have brought out keen competition and as low as $25 has been done in a number of instances. Southern iron remains weak, although no quotations below $20, base, Birmingham, have been reported in this district, and a few sales have been made at as high as $21. Inasmuch as buyers are at present interested in quick deliveries, they are not always willing to wait for shipments from outside producing centers. Nevertheless an outside interest has taken orders for over 2000 tons of Northern iron in southwestern Michigan and northern Indiana. Included in this total were 500 tons of malleable for a Michigan melter and 500 tons of foundry for an Indiana user. A number of good sized tonnages have been bought from sources of supply in the Chicago district. A local user has closed for 2000 tons of malleable and foundry. Another melter in the metropolitan district has placed 1200 tons of foundry and a third has ordered 1000 tons of malleable. A number of small sales of silvery have been made at the Jackson County schedule. A current inquiry calls for 700 tons of 8 to 10 per cent silvery for delivery over the remainder of the year. The Thomas furnace at Milwaukee is expected to blow out tomorrow.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumer's yard or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$30.04 to $30.15
Northern coke No. 1, sil. 2.25 to 2.75	25.50 to 26.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	25.00 to 26.00
Malleable, not over 2.25 sil.	25.00 to 26.00
Basic	25.00 to 26.00
High phosphorus	25.00 to 26.00
Southern No. 2	26.01 to 27.01
Low phos., sil. 1 to 2 per cent, copper free	33.00
Silvery, sil. 8 per cent	39.29

Ferroalloys.—Sales of ferromanganese have involved small tonnages, the most recent being 50 tons. The lowest current price appears to be $108.50, Eastern seaboard, and as resale material is being absorbed, the market is gaining strength. Spiegeleisen has been sold at as low as $45, delivered.

We quote 80 per cent ferromanganese, $116.88, delivered; 50 per cent ferrosilicon, $85 to $87, delivered; spiegeleisen, 18 to 22 per cent, $45, delivered.

Plates.—The appearance of the largest railroad car inquiries since early in the year has given the plate market, and the steel market generally, an impetus which it has lacked for months. The Southern Pacific has asked for figures on 8730 freight cars, 74 steam passenger cars, 78 electric cars, 58 locomotives and 5000 refrigerator cars for the Pacific Fruit Express. The Union Pacific is also expected to issue large inquiries shortly and for the two roads the total outlay for new equipment will be close to $90,000,000. The freight cars now on inquiry by the Southern Pacific will alone involve more than 140,000 tons of plates, shapes and bars. The St. Louis-San Francisco has entered the market for 2500 refrigerator cars, while the Baltimore & Ohio is inquiring for 1000 gondola and 400 hopper cars. An inquiry from the Milwaukee Gas Light Co. for a gas holder involves 1500 tons of plates. The Producers & Refiners Corporation has placed two 55,000 bbl. oil storage tanks, calling for 600 tons.

The mill quotation is 2.60c., Chicago. Jobbers quote 3.30c. for plates out of stock.

Cast Iron Pipe.—Demand shows a seasonal let up and manufacturers are showing greater flexibility as to price, indicating that they are in need of new business. Water pipe in practically all sizes above 6 in. is now available at $49, Birmingham, and variations above or below that price are due to delivery considerations. On extended delivery makers are willing to name lower prices than on early shipments. White Cloud, Mich., rejected figures on 100 tons. St. Louis is inquiring for 1000 tons of 6-in.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $61.20; 6-in. and above, $57.20; class A and gas pipe, $5 extra.

Sheets.—While Japanese inquiries are slow in developing, eventual purchases for reconstruction work in that country are confidently expected to exceed 100,000 tons. In the meantime, domestic business in sheets is light and it is evident that mills are making a strenuous effort to maintain their present price level while buyers continue to hold back their purchases in the hope of breaking the market. No important change in the situation has taken place.

Mill quotations are 3.75c. to 3.85c. for No. 28 black, 3c. for No. 10 blue annealed and 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote, f.o.b. Chicago, 4.35c. for blue annealed, 5.20c. for black and 6.35c. for galvanized.

Bolts and Nuts.—Specifications are better than they have been for some time, coming from practically all sources, including the farm implement makers, who, while still operating at a low rate, are showing some improvement. Most buyers are closing contracts for fourth quarter, although this is not true of the jobbers, who apparently do not wish to take any action

which would tend to sustain present market levels. Large machine bolts appear to be freely available at 60 and 10 off list. Sellers are making fewer concessions to compensate for the new list prices.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.20c.; machine bolts up to ⅞ x 4 in., 45 and 5 per cent off; larger sizes, 45 and 5 off; carriage bolts up to ⅞ x 6 in., 40 and 5 off; larger sizes, 40 and 5 off; hot pressed nuts, squares and hexagons, tapped, $2.50 off; blank nuts, $2.50 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off.

Rails and Track Supplies.—The Kansas City Southern has placed 6000 tons of rails with a local mill. The Baltimore & Ohio, Chicago terminal, has ordered 2000 tons of rails from the Inland Steel Co. This is in addition to the 50,000 tons bought by the Baltimore & Ohio proper, previously reported in these columns. Inquiries for track supplies are the largest in months. Pending business includes over 20,000 tons of tie plates, 60,000 kegs of spikes, 30,000 kegs of bolts, as well as some angle bars, although the latter are usually bought with the rails.

Standard Bessemer and open-hearth rails, $43; light rails, rolled steel, 2.25c. f.o.b. makers' mills.

Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.85c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.90c. base and track bolts, 4.90c. base.

Structural Material.—While fabricated lettings for the week were not particularly large, a number of important new projects have come up. A bank and office building for the Brotherhood of Locomotive Engineers at Cleveland will involve about 9000 tons. Revised plans for the Ford Motor Co. plant at St. Paul call for 10,000 tons. Bids have been taken on the Twin Branch power plant, Mishawaka, Ind., requiring 4500 tons, and an early award is expected. Local prices on plain material remain firm and unchanged.

The mill quotation on plain material is 2.60c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

Wire Products.—Knowing that they can obtain good delivery, buyers and jobbers, particularly, are placing orders for material as they need it. Mill bookings still fall short of shipments. Prices remain unchanged. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1004.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.80 per 100 lb.; cement coated nails, $3.25 per keg.

Bars.—Current shipments of soft steel bars from local mills still exceed new business. Specifications, however, show some improvement and new orders generally call for quick shipment, confirming the view of sellers that consumers' stocks are low. Nothing resembling heavy buying has developed, but this is hardly to be expected so long as users can obtain early deliveries against their current requirements. Nevertheless there are indications that buyers ars holding back considerable business pending a possible break in prices. Whether such a break will come or prices will hold at present levels will be disclosed by developments during the current month, according to views held in some quarters. Business in bar iron and rail steel bars remains quiet, with prices unchanged. The bar iron mill of the Interstate Iron & Steel Co. and the hard steel bar mill of the Republic Iron & Steel Co. have both resumed operations.

Mill prices are: Mild steel bars, 2.50c., Chicago; common bar iron, 2.35c. to 2.40c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.55c. for rounds and 5.05c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 2.75c. base; hoops, 4.55c.; bands, 3.95c.

Reinforcing Bars.—Awards of both large and small tonnages have been few during the week, but prices have held steadily at 2.75c., Chicago warehouse. Few new prospects have appeared, although there is still considerable tonnage pending. Awards include:

Eleven-story hotel, Detroit, Mich., 465 tons to McRae Steel Co.

Cook County, Ill., bridges, one at Barrington and other over the Little Calumet River near Lansing, 110 tons to Corrugated Bar Co.

High school building, Chillicothe, Mo., 100 tons to Joseph T. Ryerson & Son.

Phoenix Utility Co. warehouse, Duluth, Minn., 150 tons to Kalman Steel Co.

Pending business includes:

Sanitary District, Chicago, McCormick Highway, 500 tons.
Illinois State road work, 100 tons.
Elks' Memorial building, Chicago, 200 tons.

Old Material.—Scrap prices are so soft that it is difficult to put one's finger on ruling quotations. Buyers continue to place orders sparingly and stocks are steadily increasing in the hands of sellers. While present prices are exceedingly low, no sustaining influences are in sight, and it is probable that the market will go even lower before it rebounds. Railroad offerings include the Northern Pacific, 2000 tons; the Missouri, Kansas & Texas, 1500 tons, and the Baltimore & Ohio, Chicago terminal, 300 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$20.00 to $20.50
Cast iron car wheels	18.00 to 18.50
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	32.00 to 35.00
Rolled or forged steel car wheels	20.00 to 20.50
Rails for rolling	16.50 to 17.00
Steel rails, less than 3 ft.	18.00 to 18.50
Heavy melting steel	14.50 to 15.00
Frogs, switches and guards cut apart	15.00 to 15.50
Shoveling steel	14.00 to 14.50
Drop forge flashings	10.50 to 11.00
Hydraulic compressed sheets	12.00 to 12.50
Axle turnings	12.00 to 12.50
Steel angle bars	16.50 to 17.00
Per Net Ton	
Iron angle and splice bars	20.50 to 21.00
Iron arch bars and transoms	20.50 to 21.00
Iron car axles	25.00 to 25.50
Steel car axles	17.00 to 17.50
No. 1 busheling	11.50 to 12.00
No. 2 busheling	8.00 to 8.50
Cut forge	13.50 to 14.00
Pipes and flues	8.00 to 8.50
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	13.50 to 14.00
Steel knuckles and couplers	17.50 to 18.00
Coil springs	19.00 to 19.50
No. 1 machinery cast	19.00 to 19.50
No. 1 railroad cast	18.00 to 18.50
No. 1 agricultural cast	18.00 to 18.50
Low phos. punchings	16.00 to 16.50
Locomotive tires, smooth	15.00 to 15.50
Machine shop turnings	7.50 to 8.00
Cast borings	9.50 to 10.00
Short shoveling turnings	9.50 to 10.00
Stove plate	16.50 to 17.00
Grate bars	14.00 to 15.00
Brake shoes	15.50 to 16.00
Railroad malleable	18.00 to 18.50
Agricultural malleable	17.50 to 18.00

No Cause for Acting Under Dumping Law

WASHINGTON, Oct. 8.—In a Treasury decision today it was held that there was no cause for acting under the dumping law regarding imports of steel rope wire. The decision grew out of several dumping notices received from the appraising officer at Seattle, Wash.

"While it appears that the purchase price was less than the foreign home market value," said the decision, "the canvass by the special agents of American manufacturers and dealers does not disclose any injury; in fact, shows very little interest in the matter."

Alfred Box & Co., Philadelphia, builders of electric and hand-power cranes and hoists, have appointed Vrabeck & Kessler, 149 Broadway, New York, representatives for the Metropolitan district, and also Albany, Utica and Port Jervis, N. Y.; Trenton, N. J., and Connecticut. Export sales will be handled by the Wonham, Bates & Goode Trading Corporation, 251 Fourth Avenue, New York. Vrabeck & Kessler also represent the Stedman Foundry & Machine Works, Aurora, Ind.; the Stearns Conveyor Co., Cleveland, and were formerly sales representatives for the Champion Engineering Co.

New York

Prospects Encouraging for Renewal of Car Buying—Pig Iron Weak

NEW YORK, Oct. 9.—Inquiries for pig iron are without exception for early delivery; in fact, consumers seem to have gotten the habit of buying from hand to mouth and there is no indication that they intend to change their policy. The Gould Coupler Co., following its recent purchase of 500 tons of malleable, has sent out an inquiry for 2000 tons of basic for delivery at the rate of 500 tons per week, beginning immediately. Another company, whose identity has not been revealed, is quietly negotiating for about 2000 tons of foundry grades. Other inquiries include two for 500 tons each, three for 200 tons each, one for 300 tons, all for spot delivery. The Ingersoll-Rand Co. has purchased 1500 tons of foundry grades at low prices. The market is weak and $23 can be done without difficulty on both No. 2 plain and No. 2X, Buffalo, while in some cases $22.75 has been quoted. The usual eastern Pennsylvania quotation is $23.50 for No. 2 plain, and it is probable that this could be shaded by 50c.; in fact, the market is so demoralized that it is impossible to state with any accuracy what could be done on a desirable tonnage.

We quote delivered in the New York district as follows, having added to furnace prices $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25	$26.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.77
East. Pa. No. 2, sil. 1.75 to 2.25	25.77
Buffalo, sil. 1.75 to 2.25	27.91
No. 2X Virginia, sil. 2.25 to 2.75	29.94
No. 2 Virginia, sil. 1.75 to 2.25	29.44

Ferroalloys.—Included in the inquiries for ferromanganese totaling 1000 tons, mentioned last week, was one for 600 tons, which has not been closed, it is reported, but some of the smaller lots have been placed. There appears to be less resale material offered as low as $108, seaboard, duty paid, but carload lots have been sold at $109. The British price has not been changed, remaining at $117.50, but no sales are being made. One maker of spiegeleisen has made sales of the 19 to 21 per cent as low as $40, furnace, but it is understood that this furnace is now pretty well sold up. Fifty per cent ferrosilicon is offered at prices ranging from $80 to $85.

Cast-Iron Pipe.—Demand is lessening somewhat as the season advances and makers are slightly more anxious for tonnages, except in the smaller sizes, on which most foundries are still well filled up toward the end of the year. The 20,500 tons of water pipe for Porto Rico, on which new bids were obtained recently is reported to have again drawn the lowest bid from a Belgian maker and award is still pending. The Department of Water Supply, Gas and Electricity, New York, has called for new bids on its 3000 tons of 8-in. water pipe, new bids to be opened Oct. 17. The previous bids were not submitted according to the specifications and were declared informal. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $63.60; 4-in. and 5-in., $68.60; 3-in., $78.60, with $5 additional for Class A and gas pipe. Demand for soil pipe is lighter and competition is becoming keener as the season of slack business approaches. While discounts are generally unchanged, a distinct weakness is undoubtedly developing and the old quotations of 50¾ per cent off list for 6-in. heavy pipe and 40¾ off list for 6-in. standard are becoming more common. We quote discounts of both Southern and Northern makers, f.o.b. New York, in carload lots, as follows: 6-in., 34½ to 35¾ per cent off list; heavy, 44½ to 45¾ per cent off list.

Warehouse Business.—Just as, in most instances, September registered a slight decrease in business from August, so October, judged from activity thus far in the month will register a further decline in purchases of material out of stock. Although business has undoubtedly lessened considerably, prices are holding quite firm, even the market on black and galvanized sheets showing but little evidence of shading. Warehouse business seems to have fairly well simmered down to the regular customers, consumers of small tonnages. The larger buyers who are forced into purchases from stock when mill conditions are such as to preclude anything like early deliveries, have returned to buying from the mills, which are offering fairly prompt shipment in most cases. We quote prices on page 1026.

Finished Iron and Steel.—Such hopes as have arisen within the past week for improvement in steel buying have been due largely to reports, apparently trustworthy, that some of the railroads will purchase a large number of freight cars before the end of the year. Some estimates of the number of cars to be bought run as high as 100,000, but this is conjecture, as only a relatively few inquiries have been received by car builders, as noted in another column. The Baltimore & Ohio is expected to buy at least 4000, while other inquiries that are expected to come into the market shortly include 30,000 to 40,000 cars for the so-called Harriman lines, the Southern Pacific and Union Pacific; 10,000 to 15,000 for the Pennsylvania Railroad (previously mentioned); 4000 to 5000 for the Chesapeake & Ohio; 5000 for the Nickel Plate, and an indefinite number for New York Central lines. Car builders have enough work on hand to carry them pretty well through the year, so any cars bought this fall would probably be for spring delivery. Some steel companies report a slight increase in the volume of business this month, both domestic and export trade having shared in this improvement. In the export market Japan and the Philippines have figured prominently in orders booked. Structural steel shows fair activity in the metropolitan district, but the plate market is weak and dull. It is worthy of note that the largest producers of plates are adhering rigidly to 2.50c., Pittsburgh, notwithstanding the diligent efforts of two or three of the smaller Eastern mills to get business at 2.40c. Nor have the 2.40c. quotations of two Eastern shape mills seriously disturbed the determination of the larger mills to adhere to 2.50c., Pittsburgh, on shapes. Steel bars at 2.40c. and bar iron at 2.35c., Pittsburgh, are holding well, though there are reports of rerolled concrete bars going at concessions. The marked strength of steel pipe, tin plate and wire products with a fair degree of stability in sheets, is not lost sight of by close observers of the steel market, notwithstanding the much less favorable situation in plates, shapes and bars. A large independent maker of steel pipe is allocating its tonnage among its regular customers, and will probably be obliged to do so until the end of the year, so urgent is the demand for pipe from jobbers. The New York Central Railroad on Oct. 3 opened bids on 5000 tons of plates, shapes and bars; 500 tons of nails and staples, 250 tons of forging billets, and a fair tonnage of other steel products, including axles and wheels. An inquiry before the tin plate trade is for 14,000 boxes wanted by Thomas J. Lipton, tea importer.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.74c.; plates and structural shapes, 2.84c.; bar iron, 2.74c.

Coke.—Although prices on both furnace and foundry coke continue unchanged from last week, the market is slightly firmer, believed to be the result of putting out of ovens. Standard furnace coke is still quotable at $4 to $4.25 per ton, with medium sulphur at $3.75 per ton and standard foundry ranges from $5.25 to $5.75 per ton, with some brands up to $7 per ton. By-product is quoted at $11.41, Newark and Jersey City, N. J.

Old Material.—The market is weaker and prices show a further decline this week with dealers offering only $15 per ton, delivered eastern Pennsylvania, on No. 1 heavy melting steel, a decline of $1 per ton. Railroad grade or equivalent, delivered to an eastern Pennsylvania consumer, is also off $1 per ton. Specification pipe is inactive, but shipments to Lebanon, Pa., for which $15 per ton is being paid, keep the quotation unchanged. Machine shop turnings and mixed borings and turnings are weaker by 50c. per ton. Stove plate is still holding its own, shipments going forward to a Harrisburg, Pa., consumer and to New Jersey foun-

dries, but $17.50 per ton is about the high price for either shipment. The market as a whole is extremely quiet with most of the present buying on old contracts.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$11.00 to $11.50
Steel rails, short lengths, or equivalent	12.00 to 12.50
Rails for rolling	15.00 to 16.00
Relaying rails, nominal	25.00 to 26.00
Steel car axles	17.00 to 17.50
Iron car axles	25.00 to 26.00
No. 1 railroad wrought	14.00 to 14.50
Wrought iron track	13.50 to 14.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long	13.00 to 13.50
Cast borings (clean)	10.50 to 11.00
Machine-shop turnings	9.50 to 10.00
Mixed borings and turnings	9.00 to 9.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.00 to 11.50
Stove plate	13.00 to 14.00
Locomotive grate bars	13.50 to 14.50
Malleable cast (railroad)	17.00 to 18.00
Cast-iron car wheels	16.50 to 17.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$20.00 to $20.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	19.00 to 19.50
No. 1 heavy cast, not cupola size	17.00 to 17.50
No. 2 cast (radiators, cast boilers, etc.)	17.00 to 17.50

Cleveland

Reduction of Pig Iron Prices Stimulates Business—Low Prices on Strip Steel

CLEVELAND, Oct. 9.—While shipments of Lake Superior ore are falling off the October movement is expected to reach 7,000,000 tons or 2,000,000 tons less than during September. With close to 46,000,000 tons moving up to Oct. 1, late estimates indicate that the movement for the season will be between 55,000,000 and 56,000,000 tons. Ore firms already have finished shipments to some of the smaller consumers but still have considerable tonnage to ship on contracts with large consumers and the Steel Corporation has not curtailed shipments. On Oct. 1, there were 7,019,518 gross tons of ore on Lake Erie docks as compared with 5,907,272 tons on Sept. 1 and with 9,028,708 tons on Oct. 1 last year. Receipts at Lake Erie ports during September were 6,775,657 tons as compared with 5,230,831 tons during September of last year. Receipts at Lake Erie ports for the season up to Oct. 1 were 33,577,075 tons as compared with 23,902,450 tons during the corresponding period a year ago. Shipments from Lake Erie docks up to Oct. 1 were 26,383,339 tons as compared with 16,103,472 tons up to Oct. 1, 1922.

Pig Iron.—The recent reduction of prices has stimulated buying somewhat in some sections, particularly in the Buffalo district. The market continues soft with competition very keen among sellers and prices not well established in any of the Central Western producing centers. Considerable of the business placed during the week was for deliveries extending into the first quarter. In the Valley district, foundry iron has declined to $24 and Cleveland producers have reduced their quotations to $24 for outside shipment. For local delivery, Cleveland furnaces are still adhering to $25 at furnace, but in view of the fact that a Buffalo producer recently sold for Cleveland delivery a round lot at the same delivered price as quoted by Cleveland furnaces, it is not unlikely that the local $25 price will be shaded on the next good inquiry. Buffalo foundry iron is freely offered at $23 and there are unconfirmed reports that a western Pennsylvania furnace is quoting the same price, Valley basis. In Michigan the market is holding steady at $25. One producer reports sales aggregating 20,000 tons during the week, a large share of this being booked for shipment from Buffalo. The American Radiator Co. has purchased 1000 tons of foundry iron for early shipment, 500 tons for Detroit and 500 tons for Springfield, Ohio. The Jeffrey Mfg. Co., Columbus, has placed 2000 tons of foundry and malleable iron at $24, furnace. Local furnaces quoted $24 on the Columbus and Springfield inquiries, but other producers had lower freight rates. A fair volume of inquiry is pending including one of 2000 tons of foundry for the first half, this being a first inquiry that has come out for shipment beyond the first quarter. Steel making iron is inactive. We note the sale of a small lot of Bessemer at $25.25 Valley furnace.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$24.00
Northern No. 2 fdy., sil. 1.75 to 2.25	25.50
Southern fdy., sil. 1.75 to 2.25	27.00
Malleable	25.50
Ohio silvery, 8 per cent	37.52
Standard low phos., Valley furnace	30.00

Bolts, Nuts and Rivets.—Consumers are showing some hesitancy in placing orders owing to price irregularities. Manufacturers appear to be adhering rather closely to 60 and 5 per cent off list for large machine bolts for the fourth quarter, but some are quoting 60 and 10 per cent off list for early shipment. Semi-finished hexagon nuts S. A. E. have been reduced 5 per cent. Rivet prices are irregular and quotations depend more than usual on quantities involved. The leading manufacturers make quotations ranging from 2.85c. to 3c. for both current orders and for fourth quarter contracts. Small rivets are weak. On these, quotations of 70 per cent off list have appeared.

Semi-Finished Steel.—Curtailment of sheet production has caused the holding back of shipping orders for sheet bars, but some new specifications have come from mills for material for filling Japanese orders. There are virtually no new inquiries. Leading mills appear to be holding firmly to $42.50 for sheet bars, but billets and slabs are quoted at around $40.

Finished Iron and Steel.—The volume of new business shows some gain, but consumers are still following a cautious policy and are buying in small lots. As a rule, manufacturers' stocks are very low. Efforts are still being made by buyers to break regular prices on steel bars, plates and structural material, particularly on plates, because of the price concessions in the East, but these have so far apparently been without success. For desirable orders an Eastern mill has made a concession in quoting plates at 2.50c., Pittsburgh, for quick shipment, but mills in the East are usually holding to 2.50c. at mill for plates for shipment in this territory. Lake shipyards have received inquiries for two or three more lake freighters, these being in addition to inquiries for two boats from the Canadian National Railways, previously reported, that have not been placed and with the two Ford boats recently ordered, the outlook in the lake shipbuilding industry has become more promising. The only large new structural inquiry is for 6000 tons for an assembling plant for the Ford Motor Co. in St. Paul. Bids will be taken during the week for the Western Reserve Hospital buildings and the Brotherhood of Locomotive Engineers' bank building, Cleveland, requiring 6500 tons of structural material. The demand for light plates has improved with an increasing volume of business coming from the railroads. Quotations as low as 2.70c. have been made on hot-rolled strip steel, although some business is being taken at 3c. On hoops under 5 in. wide, the regular 3.15c. price appears to be holding firmly.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 9 galvanized wire, 3.70c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.40c. to 4.65c.; No. 28 galvanized sheets, 5.50c. to 5.80c.; No. 10 blue annealed sheets, 3.75c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.60c.

Rails.—The Clover Leaf Railroad has placed additional rail orders for 2000 tons equally divided between the Carnegie Steel Co. and the Inland Steel Co. The Nickel Plate Railroad is figuring on its 1924 rail requirements, and a local manufacturer has an inquiry out for 2500 tons of light rails for industrial track fabrication.

Sheets.—The market on black sheets is very weak. While 3.75c. is commonly quoted, a 3.70c. price has appeared, and a leading northern Ohio automobile

manufacturer is understood to have purchased a round tonnage at 3.60c. or 3.65c. The same buyer has placed 5000 tons of full finished sheets with an Eastern mill. Two inquiries aggregating 1900 tons are pending for black sheets for Japan. Blue annealed sheets are firm at 3c. Several quotations at 4.90c. have appeared on galvanized sheets. Generally the market is quiet. Many consumers bought in excess of their third quarter requirements and are now taking the material.

Alloy Steel.—While there is some buying by leading Detroit automobile companies, the market generally is dull and prices are weak. Concessions of ¼c. or more per lb. have been made by some mills.

Reinforcing Bars.—New inquiry is fair. The Patterson Leitch Co. has taken 400 tons for a warehouse for the Fisher Brothers, Cleveland. The Brotherhood of Locomotive Engineers building will require 250 tons. Other inquiries including St. Joseph's Infirmary, Louisville, Ky., 625 tons; a sewer in Erie, Pa., 300 tons; the Harding Junior High School, Cleveland, 100 tons.

Old Material.—There is some small lot buying by consumers, but generally the market is dull and inclined to weakness. Borings have declined 25c. a ton and turnings 50c. and several other grades have been marked down. Railroad wrought scrap has declined $1.50 a ton. Railroad scrap offered this month is reported to have brought good prices. Heavy melting steel offered by the New York Central Railroad was purchased in the Youngstown district at around $18. Local mills have a great deal of scrap coming on contracts. Shipments to the McKinney Steel Co. have exceeded handling facilities and an embargo has been declared against scrap by that plant. Some producers are holding their scrap with the expectation of getting better prices later. We quote dealers' price f.o.b. Cleveland per gross ton.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$15.50 to $16.00
Rails for rolling	18.50 to 19.00
Rails under 3 ft	17.75 to 18.00
Low phosphorus melting	19.50 to 20.00
Cast borings	12.50 to 12.75
Machine shop turnings	12.00 to 12.50
Mixed borings and short turnings	12.00 to 12.50
Compressed sheet steel	14.50 to 14.75
Railroad wrought	13.50 to 14.00
Railroad malleable	20.75 to 21.00
Light bundled sheet stampings	12.00 to 12.50
Steel axle turnings	14.50 to 15.50
No. 1 cast	21.00 to 22.00
No. 1 busheling	11.50 to 12.00
Drop forge flashings	12.00 to 12.50
Railroad grate bars	16.50 to 17.00
Stove plate	16.00 to 17.00
Pipes and flues	11.50 to 12.00

Buffalo

Fair Volume of Pig Iron Buying at Lower Prices

BUFFALO, Oct. 9.—The pig iron market continues in an unsettled condition and only one producer is especially active. The general run of inquiry is greater and several big tonnages are engaging attention. The largest of these is one for 5000 tons, but it is out of the district. One interest has done considerable business outside of the immediate Buffalo territory at $23 furnace, but $22.75 has been quoted even on No. 2X. On the usual run of carload lots of foundry iron for local delivery, $23.50 base is in effect. About 12,000 tons of new business has been placed. Recent weakness has the effect on a number of buyers of deferring immediate placing of new business in the expectation that considerably lower prices are possible.

We quote f.o.b. gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil	$23.25 to $23.50
No. 2 foundry, 2.25 to 2.75 sil	22.75 to 23.50
No. 2 plain, 1.75 to 2.25 sil	22.75 to 23.50
Basic	24.00
Malleable	24.00
Lake Superior charcoal	28.28

Finished Iron and Steel.—Little out of the ordinary has occurred to disturb the even balance in demand for finished material. Bar and shape prices hold and the only exception are occasional rumors of 2.40c. being quoted on structural shapes east of Buffalo. In the district, however, 2.50c. is the usual quotation on shapes and plates. Bar prices are firm and while new business is not especially brisk, the volume is fairly satisfactory. A large tonnage of black sheets can be placed without difficulty at 3.75c., but the average tonnages are sold at 3.85c.

We quote warehouse prices Buffalo as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.45c.; galvanized steel sheets, No. 28 gage, 6.35c.; black sheets, No. 28 gage, 5.25c.; cold rolled round shafting, 4.70c.

Old Material.—There is absolutely no buying and heavy melting steel continues to weaken. One mill is offering $16. Another buyer recently placed orders for several big tonnages at stop shipment. An unusual lot of material is being thrown on the market. Cast scrap is particularly plentiful due probably to the weakness in pig iron. The price of heavy melting steel is not sufficiently low to warrant dealers stocking up. Although there is no scrap buying, none of the consumers has any considerable tonnage on hand, and would have to come into the market should any activity develop.

We quote f.o.b. gross ton Buffalo as follows:

Heavy melting steel	$16.00 to $16.50
Low phos., 0.04 and under	23.50 to 24.50
No. 1 railroad wrought	15.00 to 16.00
Car wheels	16.50 to 17.00
Machine shop turnings	8.50 to 9.50
Cast iron borings	15.00 to 16.00
No. 1 busheling	15.50 to 16.00
Stove plate	17.00 to 17.50
Grate bars	17.00 to 17.50
Bundled sheet stampings	10.00 to 11.00
No. 1 machinery cast	19.50 to 20.50
Hydraulic compressed	16.50 to 17.00
Railroad malleable	20.00 to 21.00

Birmingham

Stocks Increase Slightly in September—Market Is Not Active

BIRMINGHAM, ALA., Oct. 9.—The Southern pig iron market continues slow though a number of small lot orders, practically all stipulated immediate delivery, are being received. The aggregate of the business is a little under the make still and some iron is going to the yards. The Alabama Co., with two blast furnaces in operation and maintaining the $24 per ton price for local delivery, has cleared its yards of all surplus iron and is booking into the middle of December with prospects of going through the rest of the year before this month is over. Alabama produced 213,083 tons of pig iron in September with 21 blast furnaces in operation and the surplus stocks on yards were increased 8337 tons. That pace has increased some this month. The start made by the Woodward Iron Co. to bring about a readjustment of the costs of production is being watched, and another of the independent iron companies will shortly take a similar step. The Woodward company put in a 15 per cent reduction in wages with the coal mining circles and notified the ore mining labor of the same intentions while furnace labor also received word. Several hundred of the men in the coal mining section entered protest, but listened to the arguments as to the cost of production in comparison with the $21 per ton price at which iron was being sold in the Middle West. While $24 is being obtained in the Southern territory, to meet competition in the Middle West, with a freight rate of $6.02 to Chicago, it was necessary to sell at $21. The surplus stocks in Alabama on Oct. 1 amounted to 108,298 tons, of which 88,272 tons is sand cast, 5260 machine cast and 14,766 tons basic. Two companies of the district have almost three-fourths of this amount. On Sept. 1 there was 99,961 tons on yards, of which 76,426 was sand cast, 8109 tons machine cast, 250 tons on warrant and 15,176 tons basic. Inquiries have been received here seeking lower levels in prices, but there is positive denial that anything has been done lower than $21.

We quote per gross ton f.o.b. Birmingham district furnace as follows:

Foundry, silicon, 1.75 to 2.25	$21.00
Basic	22.00
Charcoal, warm blast	33.00

Cast Iron Pipe.—The pressure pipe plants continue capacity operation with additional orders every week. No changes in quotations are announced, but it is still

understood that concessions are allowed on some tonnage. The sanitary pipe makers have failed to bring about any steadiness in an effort to maintain prices, and the $5 per ton advance of a few weeks ago does not appear to be sustained. While the large sized pipe makers are taking their usual amount of iron, the smaller pipe makers have cut down their requirements considerably.

Coke.—The coke market in the Birmingham district is weak and the business is in small lots. None of the local consumers is buying for the future. The quotations are weak, $7.50 being the average price for foundry coke. The bee-hive coke is not being hurried through ovens. By-product coke ovens are continuing their full operation. The 8-hr. day is to be put into effect at once by the big by-product coke oven plant of the Tennessee Coal, Iron & Railroad Co.

Old Material.—There is nothing being done in the scrap iron and steel market in this district. Dealers assert that the weak quotations shown in the price list are not significant, that many of the melters are practically making their own price. Some old contracts are still being worked on for the reason that for weeks melters have been holding back shipments though not cancelling their orders for old material.

We quote per gross ton f.o.b. Birmingham district yards, nominal prices, as follows:

Cast iron borings, chemical	$18.00 to $19.00
Heavy melting steel	14.00 to 15.00
Railroad wrought	15.00 to 16.00
Steel axles	19.00 to 20.00
Iron axles	23.00 to 24.00
Old steel rails	16.00 to 17.00
No. 1 cast	19.00 to 20.00
Tram car wheels	18.00 to 19.00
Car wheels	17.00 to 18.00
Stove plate	16.00 to 17.00
Machine shop turnings	7.00 to 8.00
Cast iron borings	8.00 to 9.00

St. Louis

Pig Iron Weakened by Low Prices Quoted by Chicago Sellers—More Basic Sold

ST. LOUIS, Oct. 9.—The St. Louis pig iron situation has been disturbed somewhat by the action of makers in Chicago, who have been selling their iron here at less than the prevailing market price. An East Side melter who bought 5000 tons of basic a week ago from a Chicago maker at a price said to be $25.50 Chicago, bought 5000 tons this week, paying $25. A St. Louis melter bought 1500 tons of foundry iron from a Chicago maker at a concession. This situation and the recent reduction in Southern iron to $21, Birmingham, have caused the market to become weak. Most melters continue their waiting policy. A Quincy stove manufacturer wants 500 tons of foundry iron. Other inquiries for carloads and up to 200 tons make another 500 tons.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Birmingham (rail and water), $5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$27.16
Northern malleable, sil. 1.75 to 2.25	27.16
Basic	27.16
Southern fdy., sil. 1.75 to 2.25	26.17

Finished Iron and Steel.—A few railroad inquiries constitute about the only business now before the market. The Missouri Pacific Railway wants 2000 kegs of standard track spikes and also has inquiries for prices on fourth quarter requirements of tank steel. Warehouse business is very quiet, and there is no buying from that source. Manufacturers who use steel are busy on old orders, but new business does not justify further purchases of raw material.

Coke.—Dealers are showing more interest in domestic coke with the approach of cold weather. Very little interest is being shown in foundry coke. Connellsville coke is selling at $5.50 to $6 for spot delivery, while some grades are bringing as high as $7.

Old Material.—The market for old material is weaker, and most items on the list are lower. The decreases range from 50c. to $1.50. Railroad lists are still heavy, but dealers continue to absorb them. This is about all the buying there is, as consumers are buying almost nothing, and will not buy until their piles of old material are cut down somewhat. New railroad lists include: Missouri Kansas & Texas, 2200 tons; Missouri Pacific, 2000 tons; Chicago & Eastern Illinois Railroad, 1000 tons; St. Louis Southwestern, 1000 tons; Kansas City Southern, 700 tons; Pullman Co., St. Louis, 500 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron Rails	$16.00 to $16.50
Rails for rolling	17.00 to 17.50
Steel rails less than 3 ft.	18.00 to 18.50
Relaying rails 60 lb. and under	26.00 to 27.00
Relaying rails, 70 lb. and over	33.50 to 34.50
Cast iron car wheels	18.50 to 19.00
Heavy melting steel	15.50 to 16.00
Heavy shoveling steel	15.50 to 16.00
Frogs, switches and guards cut apart	16.00 to 16.50
Per Net Ton	
Heavy axles and tire turnings	12.00 to 12.50
Steel angle bars	14.50 to 15.00
Steel car axles	17.50 to 18.00
Iron car axles	25.00 to 26.00
Wrought iron bars and transoms	19.00 to 19.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	14.50 to 15.00
Railroad springs	16.00 to 16.50
Cast iron borings	10.00 to 10.50
No. 1 busheling	15.00 to 15.50
No. 1 railroad cast	19.50 to 20.00
No. 1 machinery cast	20.00 to 20.50
Railroad malleable	16.50 to 17.00
Machine shop turnings	10.50 to 11.00
Champion bundled sheets	8.00 to 8.50

Boston

Lower Prices on York State and Buffalo Iron Bring Out Business

BOSTON, Oct. 9.—Keen competition among New York State and Buffalo furnaces in this territory has brought out more business. Among the largest sales reported the past week was one of 1200 tons for a Lynn, Mass., plant, and approximately 1000 tons No. 2X and No. 1X, fourth quarter delivery, for a Framingham, Mass., foundry. Other transactions brought the total sales up to better than 6000 tons. One New York State furnace is reported to have done business on a basis of $27 delivered for No. 2X, while another has done $27.66 delivered on that grade and $28.16 on higher silicon. The last two quotations are equal to $22.75 furnace for Buffalo iron. Buffalo iron is reported to have sold at $23 furnace for No. 2 plain and No. 2X, or $27.91 delivered, and apparently figured to a greater extent than other irons in sales the past week. Reports of $23.50 eastern Pennsylvania furnace base cannot be substantiated here, but $24 has been quoted frequently with differentials waived. Virginia is offered at $24.50 and $25 furnace base and Alabama can be done at $21. A Massachusetts textile machinery maker is in the market for 500 to 1000 tons No. 2X and No. 1X, and a Providence, R. I., machinery maker for 400 tons of similar iron, November and December delivery. Inquiries otherwise concern small tonnages. The New England foundries collectively are operating at about 65 per cent of capacity.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama.

East. Penn., sil. 2.25 to 2.75	$27.65 to $28.15
East. Penn., sil. 1.75 to 2.25	27.65
Buffalo, sil. 2.25 to 2.75	27.91 to 28.41
Buffalo, sil. 1.75 to 2.25	27.91 to 28.41
Virginia, sil. 2.25 to 2.75	30.42 to 31.42
Virginia, sil. 1.75 to 2.25	30.42 to 30.92
Alabama, sil. 2.25 to 2.75	*31.10
Alabama, sil. 1.75 to 2.25	*30.60

*Nominal.

Cast Iron Pipe.—The Warren Foundry & Pipe Co. was awarded a considerable tonnage of 12-in. pipe by Woonsocket, R. I., and approximately 125 tons of similar pipe by Nashua, N. H., this being the only business of importance closed recently in this territory. Gardner, Mass., has taken bids on 100 tons of 6-, 8- and 10-in. pipe for late fall delivery, and Salem, Mass., on a small tonnage to complete its fall requirements. Pipe prices remain firm on a basis of $67.10 delivered Boston common rate points for 6-in. and larger, with $5 differentials on gas and Class A pipe. Representatives report unsatisfactory labor conditions and high operat-

ing costs at foundries, with little indication of lower prices on finished product the remainder of 1923.

Warehouse Business.—Warehouse prices on soft steel bars, refined iron and angles under 3-in. have been reduced 10c. per 100 lb. to $3.51½, structural steel and plates 10c. to $3.61½, steel bands 48½c. to $4.31½, and large sizes of open-hearth steel bars $1.50 to $6.50. Small open-hearth bars are unchanged at $10 per 100 lb. Cold-rolled strip steel, in car lots, prompt shipment, is now offered at $2.75 net Pittsburgh, and in less than car lots at $3.75. The demand for warehouse products is fairly active, with competition among sellers growing. Warehouse prices follow:

Soft steel bars, $3.51½ at 100 lb. base; flats, $4.40; regular concrete bars, $3.76½; deformed bars, stock lengths, $3.76½ to $3.89; structural steel, $3.61½; tire steel, $4.80 to $5.15; open-hearth spring steel, $6.50 to $10; crucible spring steel, $12; regular steel bands, $4.31½; bands over 6 in. wide, $5.05 to $5.30; hoop steel, $5.80 to $6.30; cold rolled steel, $4.75 to $5.25; refined iron, $3.51½; best refined, $4.75; Wayne iron, $5.50; Norway iron, $6.60 to $7.10.

Coke.—Foundries continue to specify against by-product fuel contracts freely, such specifications in some instances being urgent. The largest local coke maker is two to three weeks behind on deliveries, but is shipping as fast as car supply permits. The other producer is doing better, but is behind on shipments. Both continue to quote foundry coke at $13.50 delivered in New England. Some foundries are putting out tentative feelers on first half 1924 fuel, but collectively little interest is shown. Connellsville district foundry coke is offered at prices much under the delivered basis of New England product, but sales are practically nil.

Old Material.—More activity is noted in purchases of machinery cast by New England foundries. Sales the past week include No. 1 at $23.50 to $24, but in such cases the freight rate was rather high. On the other hand, a larger tonnage sold at $22 and $22.50 delivered, which represents a drop of about 50c. a ton in the market. The scrap market otherwise is quiet. In the opinion of some dealers, business is quieter than at any previous period this year. Cast iron borings for chemical purposes, which a month ago were in limited supply, are offered freely now and prices are about $2 a ton lower. Increased offerings of yard wrought, machine shop turnings and rolling mill borings have caused a drop of about $1 a ton in the market, and of railroad wrought, blast furnace borings and turnings and shafting of about 50c.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$22.00 to $23.00
No. 2 machinery cast	20.00 to 21.00
Stove plate	16.50 to 17.00
Railroad malleable	22.00 to 22.50
Street car axles	20.00 to 21.00

The following prices are offered per gross ton lots f.o.b. Boston common rate shipping points:

No. 1 heavy melting steel	$11.50 to $12.00
No. 1 rail wrought	13.00 to 13.50
No. 1 yard wrought	11.50 to 12.00
Wrought pipe (1-in. in diam., over 2 ft. long)	10.50 to 11.00
Machine shop turnings	7.50 to 8.00
Cast iron borings, rolling mill	8.50 to 9.00
Cast iron borings, chemical	10.50 to 11.00
Blast furnace borings and turnings	7.50 to 8.00
Forged scrap and bundled skeleton	8.50 to 9.00
Shafting	17.50 to 18.00
Street car axles	18.00 to 18.50
Rails for rerolling	13.50 to 14.00

Detroit Scrap Declines

DETROIT, Oct. 9.—The market on waste materials has shown more of a softening tendency during the past week with a number of grades recording declines of 50c. to $2 per ton. Dealers are not actively interested in present offerings other than sufficient tonnage for prompt movement.

The following prices are quoted on a gross ton basis, f.o.b. cars producers' yards, excepting stove plate, automobile cast and No. 1 machinery cast, which are quoted on a net ton basis:

Heavy melting steel	$12.00 to $12.50
Shoveling steel	12.00 to 12.50
No. 1 machinery cast	17.00 to 17.50
Cast borings	10.00 to 11.00
Automobile cast scrap	24.00 to 25.00
Stove plate	16.00 to 17.00
Hydraulic compressed	10.50 to 11.25
Short turnings	10.00 to 11.00
Long turnings	9.00 to 9.50
Flashings	9.50 to 10.00

Cincinnati

Southern Ohio Iron Rules at Low Price—Alabama Iron Is Weak

CINCINNATI, Oct. 9.—Two fair-sized tonnages were reported to have been placed last week, the one carrying the most interest for the trade being an order for 1200 tons placed by a central Ohio melter. While few of the details of the deal are available, indications are that the order was equally divided between two southern Ohio furnaces and one Cleveland district stack. The price at which the order was placed has not been disclosed, but it is known that a quotation of $23.90, Ironton, was not low enough to take the business. On a 500-ton inquiry for a radiator company with a plant in the district $23.50, Ironton basis, was quoted, but the party making the quotation did not get the order. The Southern market is dull and weak. One furnace interest, in an effort to book home tonnage, made a price of $20, Birmingham, last week, but failing to get any response from the trade, moved the price up again to $21. It is admitted that on a fair-sized tonnage less than $21 would be considered. Sales generally speaking were very light, and consisted, with the exception of those noted above, of one and two car lots for immediate shipment. The only inquiry of importance is for 1500 tons of Northern foundry iron from a melter in this district.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$25.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	25.55
Ohio silvery, 8 per cent	36.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	26.27
Basic Northern	26.27
Malleable	26.27

Finished Material.—Little change is noted in the demand for finished materials, and orders are still being booked on a carload basis. Some sellers report a slightly improved demand, however, but the market can still be described as quiet. So much cannot be said for the buyers, however, who are hounding the mills for delivery of their orders. This is perhaps the most encouraging feature of the whole situation, as it is taken as an indication of the low point to which stocks have been allowed to dwindle. However, so long as transportation conditions continue as they are today, little change in the policy of the buyers is expected. Prices generally are very firm, and there have been no reports of price shading in bars, plates or structural shapes, which are still quoted by mills in the Middle West at 2.40c. and 2.50c. respectively. Little activity is noted in wire products, and with the exception of nails, concessions are reported to have been offered on manufactured products by some of the smaller mills. On bolts and nuts, prices are weak, but some fair-sized orders are being placed. There is also a good demand for pipe, with prices very firm.

Sheets.—Demand keeps up very well, and carload orders are more numerous. Prices are being well maintained, and while concessions are reported to have been made on black sheets, the market generally is quotable at 3c., 3.85c. and 5c. for blue annealed, black and galvanized respectively. Tin plate orders are also being booked, but no delivery promises are being made by some mills, other than that it will probably be some time during the first quarter. Prices are very firm.

Structural Shapes.—Not a single inquiry of importance has come out in the past week, although many projects are about ready to break. There is a fair demand for structural shapes from jobbers and fabricators who have work in hand. Prices show no change, 2.50c., Pittsburgh, being the regular quotation.

Reinforcing Bars.—A large number of small projects go to make up a fair tonnage on inquiry. An addition to the plant of Rauh & Mack, Cincinnati, requiring 400 tons, has been awarded to the Ferro-Concrete Construction Co. Prices generally are unchanged from last week, ranging from 2.20c. to 2.40c.

Warehouse Business.—Local jobbers report fair de-

mand for small angles. Reinforcing bars are also moving in better volume. Business generally is showing improvement, though orders are confined to small lots. Wire products are moving in fair volume. Prices have not been changed for some months, and no reports of shading are current.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.50c.; cold-rolled flats, squares and hexagons, 5c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, 5.35c.; No. 28 galvanized sheets, 6.35c.; No. 9 annealed wire, $3.60 per 100 lb.; common wire nails, $3.60 per keg base.

Coke.—Fair activity marked the coke market and sales of foundry fuel were much more numerous than last week. Prices generally are unchanged. Connellsville furnace is quoted at $4.50 and foundry at $5. New River remains at $12, and Wise County at $5.50 for furnace and $6.50 to $7 for foundry. Tentative inquiries from two southern Ohio furnaces for coke are before the trade and at least one of these will go into blast in the next two weeks.

Old Material.—Dealers report very light business in old materials, and prices are off again from 50c. to $1. Some buying to fill old contracts is being done by dealers, but consumers are buying in only small quantities for immediate shipment.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

Per Gross Ton	
Bundled sheets	$11.00 to $11.50
Iron rails	14.00 to 14.50
Relaying rails, 50 lb. and up	27.50 to 28.00
Rails for rolling	15.00 to 15.50
Heavy melting steel	13.50 to 14.00
Steel rails for melting	14.00 to 14.50
Car wheels	13.50 to 14.00
Per Net Ton	
No. 1 railroad wrought	12.00 to 12.50
Cast borings	8.00 to 8.50
Steel turnings	7.50 to 8.00
Railroad cast	15.00 to 15.50
No. 1 machinery cast	18.00 to 18.50
Burnt scrap	11.50 to 12.00
Iron axles	22.00 to 22.50
Locomotive tires (smooth inside)	13.00 to 13.50
Pipes and flues	7.50 to 9.00

Philadelphia

No Signs of Better Conditions in Pig Iron and Steel—Scrap Weaker

PHILADELPHIA, Oct. 9.—The first week of the final quarter of the year has brought no improvement in the steel and pig iron trade. Buyers are pursuing a very cautious policy, and nothing has occurred to alter the situation as it stood a week ago. Pig iron has shown no further decline, but the bars are down and there is no telling what might be done on attractive tonnage. Some steel companies which noted a slight gain in their bookings in September over July and August say that orders thus far in October are not on a par with those booked during September. The scrap market more and more reflects the declining rate of operation in the Eastern steel trade, and nearly all scrap prices are lower this week.

Pig Iron.—Temporarily, at least, the decline of pig iron prices seems to have been checked. This is due partly to the fact that two furnace companies which went after business aggressively have booked enough orders to tide them over for a while and will probably refrain from active competition for a few weeks. One furnace company which went below $23.50, furnace, on a part of its sales gathered orders totaling close to 10,000 tons and is now quoting $24, furnace, as its minimum. The outstanding plaint of pig iron sellers is that there will be no real improvement in the market until production is materially cut down. There is talk of several furnaces going out of blast, but no definite dates have been fixed for blowing out, each operator apparently hoping that some of his competitors will be the first to go out. There is no demand for basic, but one or two sellers would be willing to quote $24.50, delivered eastern Pennsylvania, which is 50c. a ton below the last important sale. Very little foundry iron business has been closed in the immediate Philadelphia district, most of the current orders coming from the New York and New England districts. One of the largest sales was 1500 tons to a Phillipsburg, N. J., machinery company.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$24.26 to $25.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	24.76 to 26.13
East. Pa. No. 1X	25.26 to 26.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.17 to 30.17
Virginia No. 2X, 2.25 to 2.75 sil.	30.17 to 30.67
Basic delivered eastern Pa.	24.50 to 25.00
Gray forge	24.50 to 25.00
Malleable	25.00 to 26.00
Standard low phos. (f.o.b. furnace)	28.00 to 30.00
Copper bearing low phos. (f.o.b. furnace)	28.00

Ferroalloys.—With resale material available at $108 to $110, most of the current transactions are restricted to these offerings. Spiegeleisen, 19 to 21 per cent, has been sold at low as $40, furnace.

Coke.—Blast furnace coke on contract for delivery over the remainder of the year is offered at $4.50, Connellsville, but apparently few contracts are being made, as spot coke is obtainable at $4, ovens.

Semi-Finished Steel.—Eastern mills have noted the quotation which some Pittsburgh or Youngstown mills have made on billets, namely $40 on rerolling quality, but have not yet gone that low. There has been no business of sufficient importance to test the market. Forging billets are still generally quoted at $47.50, Pittsburgh.

Plates.—The quotations of 2.40c., Pittsburgh, made by at least two Eastern mills on plates have apparently not affected the determination of the larger producers to adhere to 2.50c., Pittsburgh. Two of the large Eastern producers say they have not deviated from the latter price. There is very little plate business and some of the mills are down to a 25 or 30 per cent operation.

Structural Material.—A pier at Baltimore for the Baltimore & Ohio Railroad, requiring 3000 tons, is the largest structural project up for bids in this district. The demand for structural shapes is very light, and the mills which are selling at 2.40c., Pittsburgh, are not getting enough tonnage to operate at a full rate. One mill is down to a very low rate of operation. The larger makers of shapes continue to quote 2.50c., Pittsburgh.

Bars.—The demand for steel bars is neither better nor worse. A fair number of orders is being received, but they are small and for immediate requirements only. A much improved demand from the railroads for staybolt and engine bolt iron is reported by makers of bar iron. Bolts, nuts and rivets, however, are very dull and the demand is light. Steel bars are firm at 2.40c., Pittsburgh, except that occasional concessions on rerolled concrete bars are reported, while bar iron is quoted at 2.35c. and 2.40c., Pittsburgh, according to the mill.

Sheets.—Specifications for sheets are sufficiently good to insure a fair rate of operation over the remainder of the year. One Eastern maker of blue annealed sheets will continue to run its sheet mills at a full rate through the fourth quarter. The only price concessions reported are on black sheets, usually about $2 a ton, but these concessions apparently are confined to one or two mills in the Pittsburgh or Youngstown district.

Warehouse Business.—A fair demand continues for steel products out of stock. Prices are unchanged, and for local delivery are as follows:

Soft steel bars and small shapes, 3.55c.; iron bars (except bands), 3.55c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ½ in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, ¼ in. and heavier, 3.65c.; tank steel plates, ⅜ in., 3.95c.; blue annealed steel sheets, No. 10 gage, 4.25c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.65c.; structural shapes, 3.65c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.75c.; narrower than 1 in., all gages, 5.25c.; steel bands, No. 12 gage to ⅜-in., inclusive, 4.35c.; rails, 3.55c.; tool steel, 8.50c.; Norway iron, 7c.

Ore.—Receipts of ore from abroad last week were

unusually light, consisting of only 887 tons of iron ore from Germany and 1500 tons of chrome ore from British India.

Old Material.—One Eastern steel mill which is usually in the market at all times for scrap has withdrawn entirely, due to its low rate of operation, and this has caused weakness in the products it consumes, mostly bundled sheets and turnings. No. 1 heavy melting steel is slightly easier and it is doubtful if the market can be quoted either above or below $16, delivered. A sale of 1000 tons at $16.50 was made late last week, but since then further weakness has developed. Prices on many grades are down 50c. or more a ton from last week's quotations.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$16.00
Scrap rails	16.00
Steel rails for rolling	$18.50 to 19.00
No. 1 low phos., heavy 0.04 and under	22.00 to 23.00
Cast-iron car wheels	20.50 to 21.50
No. 1 railroad wrought	18.00 to 18.50
No. 1 yard wrought	16.00 to 17.00
No. 1 forge fire	13.50 to 14.00
Bundled sheets (for steel works)	13.00 to 13.50
No. 1 busheling	15.00 to 15.50
Mixed borings and turnings (for blast furnace use)	11.50 to 12.00
Machine shop turnings (for steel works use)	13.00 to 13.50
Machine shop turnings (for rolling mill use)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mills)	14.00 to 14.50
Cast borings (for chemical plants)	17.00 to 17.50
No. 1 cast	19.50 to 20.50
Heavy breakable cast (for steel plants)	18.50 to 19.00
Railroad grate bars	17.00 to 18.00
Stove plate (for steel plant use)	17.00 to 18.00
Railroad malleable	20.00 to 20.50
Wrought iron and soft steel pipes and tubes (new specifications)	15.00 to 15.50
Shafting	23.00 to 24.00
Steel axles	22.00 to 22.50

San Francisco

Japanese Business Develops Slowly—General Conditions Quiet

SAN FRANCISCO, Oct. 3.—Notwithstanding the many expressions of an optimistic character with reference to business conditions in the iron and steel branches of industry, there is an unmistakable undercurrent of easiness, and the Pacific Coast situation is experiencing the same slipping process which has been so clearly defined in the leading centers of the Eastern States for several weeks. There has been considerable newspaper talk since the great earthquake disaster in Japan, describing with much detail how the stocks of iron and steel commodities in China, the Philippines and on the Pacific Coast were being rapidly absorbed to supply the reconstruction requirements of the devastated sections of Japan. It is true that the demand for lumber and food supplies, particularly the latter, shows a moderate increase, but as far as iron and steel are concerned the inquiries thus far have not developed into any enlarged actual business. Those familiar with the situation say it is too soon to expect much in this line, for the simple reason that very extensive preliminary work has to be done before permanent constructive plans can be prepared. In a general way, business remains in about the same state of quietness as for the past two weeks. Prices, while not much lower, are only fairly well sustained.

Pig Iron.—Following the sharp decline in the price of Southern pig iron, prices in this part of the country naturally weakened, but not as much as some dealers expected. Current quotations are given by importers as from $33 to $34 per ton on imported, and probably as high as $36 on domestic, although scarcely any of the latter has been sold in this vicinity recently. Some orders for domestic for Los Angeles have been booked during the last two or three weeks for future delivery and more business for prompt shipment to that part of the State is confidently expected. As heretofore reported, there are some inquiries here but the resultant business is confined to small orders. Both mills and foundries seem to be well supplied for all immediate needs and there is marked hesitancy in what might be termed stocking up, the impression being prevalent that prices have not yet touched the lowest levels. It is stated that several cargoes of pig iron are now being negotiated for arrival here about the end of the year. During the last few days, several orders have been booked for Los Angeles aggregating about 500 tons per month for the next three months.

Finished Iron and Steel.—As might be expected, business is more quiet than during the middle of summer, but factors say there is not much cause for complaint thus far, notwithstanding rumors of increasing dullness. There is a steady demand for bars for reinforcing concrete. A large amount of work is under way, not only in this city, but in the nearby counties, and contractors report considerable more construction work being planned. Prices are held steady. Steel bars (merchant) round, flats, squares, angles, channels all meet with ready sale at 3.75c: mill price and 3.25c. in carload lots. Structural steel is 3.85c. to jobbers and 3.35c. in carload lots.

Coke.—Sales are few and far between, the demand being unusually light, but some improvement is looked for before the end of the year. Several small lots of foreign coke have been sold at about $20 per net ton ex-ship. A few days ago the Southern Pacific Co. asked for bids for furnishing 600 tons of coke under its usual specifications.

Old Material.—Sales continue in a very small way with supplies more than ample for the present. While prices are quoted the same as two weeks ago, there has been some shading as a possible inducement to some of the regular buyers to increase buying orders. This is said to have little effect, however, for like pig iron, there is a general belief that prices will be lower. Present prices are quoted at from $14 to $15 per ton for the best selected grades and correspondingly lower for the off and mixed lots. One lot of heavy melting steel was sold within the week at $15, but this was said to be an exceptionably good lot. Prices on old material in Los Angeles are reported as a little firmer than in this city.

Canadian Scrap Market

TORONTO, ONT.—While the general opinion among dealers is that the Canadian iron and steel scrap market is about due for some improvement, the demand for these commodities during the past week or ten days does not carry out these expressions. Some contracts have been booked for scrap for future delivery, but the greater part of the demand is for material for immediate use and melters are buying chiefly on a hand-to-mouth basis. The Montreal market has been dull of late and dealers point out that resale possibilities are stagnant. No change is reported in Montreal prices for the week, but Toronto dealers have made several reductions in their buying prices. Canadian dealers are now offering the following prices for scrap:

Dealers' Buying Prices—Gross Tons

	Toronto	Montreal
Steel turnings	$10.00	$7.00
Machine shop turnings	10.00	8.00
Wrought pipe	8.00	8.00
Rails	12.00	13.00
No. 1 wrought scrap	14.00	14.00
Heavy melting steel	12.00	11.50
Steel axles	15.00	18.00
Axles, wrought iron	18.00	20.00
Net Tons		
Standard car wheels	15.00	16.00
Malleable scrap	15.00	16.00
Stove plate	15.00	16.00
No. 1 machinery cast	20.00	20.00

The plant of the Miami Cycle Co., Middletown, Ohio, will be sold by order of the Common Pleas Court at Hamilton, Ohio, on Nov. 5. The company some months ago was placed in the hands of a receiver. It is reported an offer for the purchase of the property has been made which, if accepted, would enable the company to pay its creditors 30c. on the dollar.

British Iron and Steel Market

Japan Still Buying Heavy Tonnages of Sheets—Finished Steel Easier; Galvanized Sheets Higher—Belgium Secures Large Rail Orders

(By Cable)

LONDON, ENGLAND, Oct. 9.

Improved demand for pig iron is resulting from the feeling that prices are low, and inquiries are spreading over the first quarter of next year. In Scotland 44 furnaces now are blowing. Continental demand is expanding but the position generally is dependent on a settlement (or otherwise) of the boilermakers' lockout.

Hematite is firm, with increased sales on better demand for steel products.

Foreign ore is dull. Low grade Mediterranean ores are selling at cheap rates. Bilbao Rubio is held at about 22½s. ($5.13) c.i.f. Tees.

Finished steel is in better demand. Australia has bought good lines of plates. The Leeds Forge Co. has been awarded a contract for 50 steel coaches for Australia. India has purchased structural material. Japan is buying sheets, wire and wire nails. Steel makers generally are so anxious to secure orders that they are disposed to make concessions.

Continental position is practically unchanged. There is little disposition on the part of consumers to buy forward, owing to the uncertainty of prices and the status of the Ruhr settlement. Quotations generally are in francs.

In the Ruhr the coke ovens and blast furnaces are preparing to resume but the works' weakened financial position makes the outlook uncertain. The German home demand is falling off.

In France 109 blast furnaces were blowing on Sept. 1. In Belgium the Société Anonyme d'Ougrée Marihaye and the Société Anonyme John Cockerill, jointly, have secured an Argentine rail order of 45,000 tons. d'Ougrée has obtained also an order from Spain for 15,000 tons of rails.

In Holland the (new) Royal Netherlands Blast Furnace & Steel Works plans to blow in its (two) furnaces early next year.

Tin plate market is firm, on large buying by merchants and consumers. Makers are sold out for October delivery. Of stock plates there is a short supply. Export markets are active. Richard Thomas & Co., Ltd., Swansea, Wales, and the Grovesend Steel & Tin Plate Co., Ltd., Gorseinon, Wales, have merged their interest. There is other amalgamation talk going on.

Galvanized sheets are firm, with fair buying on India, Australia, South America and Far East specifications.

Japanese demand for black sheets is being maintained. The works are heavily sold and not keen sellers. Japanese 6 x 3, 13's, 107 lb., are being sold at £21 (4.27c. per lb.).

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.56 per £1, as follows:

Durham coke, delivered	£1	18s.				$8.66	
Bilbao Rubio ore†	1	4				5.47	
Cleveland No. 1 foundry	5	2½				23.37	
Cleveland No. 3 foundry	4	16				21.89	
Cleveland No. 4 foundry	4	11				20.75	
Cleveland No. 4 forge	4	8	to £4	9s.		20.06 to	$20.29
Cleveland basic	4	10	to 4	14		20.52 to	21.43
East Coast mixed	4	18½	to 5	0		22.46 to	22.80
Ferromanganese*	17	10				79.80	
Rails, 60 lb. and up	8	0	to 9	0		36.48 to	41.04
Billets	7	10	to 8	5		34.20 to	37.62
Sheet and tin plate bars, Welsh	9	2½				41.61	
Tin plates, base box	1	3⅛	to 1	3¼		5.27 to	5.30
						C. per Lb.	
Ship plates	9	0	to 9	10		1.83 to	1.93
Boiler plates	12	10	to 13	0		2.54 to	2.65
Tees	9	10	to 10	0		1.93 to	2.04
Channels	8	15	to 9	5		1.78 to	1.88
Beams	8	10	to 9	6		1.73 to	1.83
Round bars, ⅜ to 3 in.	10	5	to 10	15		2.09 to	2.19
Galvanized sheets, 24 g.	19	0	to 19	5		3.87 to	3.92
Black sheets, 24 gage	13	15				2.80	
Black sheets, Japanese specifications	15	5				3.10	
Steel hoops	12	0	& 12	10*		2.44 &	2.54*
Cold rolled steel strip, 20 gage	17	5				3.51	
Cotton ties, Indian specifications	15	0				3.05	

*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron:							
Belgium	£5	2½s.				$23.37	
France	5	2½				23.37	
Luxemburg	5	2½				23.37	
Billets (nominal):							
Belgium	6	12½	to £7	0s.		30.21 to	$31.92
France	6	12½	to 7	0		30.21 to	31.92
Merchant bars:						C. per Lb.	
Belgium	8	7½	to 9	0		1.71 to	1.83
Luxemburg	8	7½	to 9	0		1.71 to	1.83
France	7	10				1.53	
Joists (beams):							
Belgium	8	0				1.63	
Luxemburg	8	0				1.63	
France	7	10	to 7	12½		1.53 to	1.55
Angles:							
Belgium	8	0	to 8	5		1.63 to	1.68
⅛-in. plates:							
Belgium	8	10				1.73	
Germany	8	10				1.73	
¾-in. plates:							
Luxemburg	7	15				1.58	
Belgium	8	0				1.63	

Treasury Department Decision as to Tariff on Scrap

WASHINGTON, Oct. 9.—The customs division of the Treasury Department today rendered a decision holding that all scrap steel valued at not more than 7c. per lb. is dutiable at the rate of 75c. per ton under paragraph 301 of the Fordney-McCumber tariff act. The opinion was based on the fact that there was a variance in practice at the ports of Philadelphia and New York in the classification of scrap steel valued at more than 7c. per lb. It is the practice of the New York appraiser to assess a duty upon this steel scrap at 75c. under paragraph 301, while it is the Philadelphia practice to assess a duty at 75c. under paragraph 301, plus 8 per cent under paragraph 305, for the reason that the scrap steel contained more than 6/10 of 1 per cent of tungsten. Paragraph 305 provides that in addition to the rates of duty called for in schedule 3, steel in all forms and shapes and by whatever processes made and by whatever name designated containing more than 6/10 per cent tungsten shall be assessed with duty in addition to the rates provided for in the schedule at 8 per cent.

The decision points out that the Treasury Department construes paragraph 305 as relating to articles which are incomplete or partly manufactured, and not waste or scrap material resulting from the manufacture of the material into further advanced material or articles, and it is accordingly of the opinion that scrap steel is not covered by paragraph 305. Consequently it approved the practice of the appraiser at New York in assessing a duty of 75c. per ton on scrap. Some time ago the customs division held that scrap steel valued at more than 7c. per lb. is dutiable under a basket clause calling for a duty of 10 per cent on waste.

Acquires Sole Control of American Nickel Corporation

The Mond Nickel Co., Ltd., of London, England, has purchased the minority stock previously held by Charles T. Hennig and G. P. Bassett, Jr., and is now the sole owner of the American Nickel Corporation, Clearfield, Pa., manufacturer of 99 per cent pure malleable nickel.

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.50c.

Structural Materials

Beams, channels, etc., base, per lb.....2.50c.
Sheet piling .....2.65c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.40c.
Soft steel bars for cold finishing.....$3 per ton over base
.....2.40c.
Reinforcing steel bars, base.....3.25c.
Refined iron bars, base, per lb.....3.25c.
Double refined iron bars, base, per lb.....4.85c. to 5.00c.
Stay bolt iron bars, base, per lb.....8.00c. to 8.50c.

Hot-Rolled Flats

Hoops, base, per lb.....3.15c.
Bands, base, per lb.....3c. to 3.15c.
Strips, base, per lb.....3c. to 3.15c.
Cotton ties, per bundle of 45 lb.....$1.63

Cold-Finished Steels

Bars and shafting, base, per lb.....3.25c.
Bars, S. A. E. Series, No. 2100.....4.50c. to 4.75c.
Bars, S. A. E. Series, No. 2300.....6.50c. to 6.75c.
Bars, S. A. E. Series, No. 3100.....5.50c. to 5.75c.
Strips, base, per lb.....5.00c.

Wire Products

Nails, base, per keg.....$3.00
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in..... 2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.75
Annealed fence wire, base, per 100 lb..... 2.90
Spring wire, base, per 100 lb..... 3.70
Galvanized wire, No. 9, base, per 100 lb..... 3.35
Galvanized barbed, base, per 100 lb..... 3.80
Galvanized staples, base, per keg..... 3.80
Painted barbed wire, base, per 100 lb..... 3.45
Polished staples, base, per keg..... 3.45
Cement coated nails, base, per count keg..... 2.70
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads,
60, 10 and 10 to 60, 10 and 5 per cent off list
Machine bolts, small, cut threads,
60 and 10 to 60 and 5 per cent off list
Machine bolts, larger and longer,
60 and 10 to 60 and 5 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads,
60 and 10 to 60 and 5 per cent off list
Cut threads.....60 to 50, 10 and 5 per cent off list
Larger and longer.....60 to 50, 10 and 5 per cent off list
Lag bolts.....65 and 10 to 65 and 5 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,
50 and 5 per cent off list
Larger and longer sizes.....50 and 5 per cent off list
Hot pressed square or hex. nuts, blank.....4.00c. off list
Hot pressed nuts, tapped.....4.00c. off list
C.p.c. and t. square or hex. nuts, blank.....3.75c. off list
C.p.c. and t. square or hex. nuts, tapped.....3.75c. off list
Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.....80 per cent off list
⅞ in. and larger, U. S. S.....75 per cent off list
Small sizes, S. A. E.....80 and 10 per cent off list
S. A. E., ⅝ in. and larger.....75 and 10 per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 5 per cent off list
Turnbuckles, with ends, ½ in. and smaller,
55 and 5 to 50 per cent off list
Turnbuckles, without ends, ½ in. and smaller,
70 and 10 to 65 and 5 per cent off list
Washers .....5c. to 5.25c. off list

Cap and Set Screws

Milled square and hex. head cap screws....70 per cent off list
Milled set screws.....70 per cent off list
Upset cap screws.....75 and 10 per cent off list
Upset set screws.....75 and 10 per cent off list
Milled studs .....50 and 10 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb. $2.75 to $3.00
Small rivets .....65 and 10 to 70 off list

Track Equipment

Spikes, ⅝ in. and larger, base, per 100 lb..... $3.15
Spikes, ½ in., ⅞ in. and ¾ in., per 100 lb.....$3.15 to 3.50
Spikes, ⅜ in..... 3.15 to 3.50
Spikes, boat and barge, base, per 100 lb..... 3.50
Track bolts, ¾ in. and larger, base, per 100 lb..$4.00 to 4.25
Track bolts, ½ in. and ⅝ in., base, per 100 lb.. 5.00 to 5.50
Tie plates, per 100 lb..... 2.55 to 2.60
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+19	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Less carload lots 4 points less.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	55	3 and 3¼ in.	36
1¼ and 1½ in.	47	3½ and 3¾ in.	37
1¾ in.	31	4 in.	41
2 and 2¼ in.	22	4½ in. and 5 in.	33
2½ and 2¾ in.	32		

Hot Rolled

3 and 3¼ in.	38	4 in.	43
3½ in. and 3¾ in.	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....83 per cent off list
Carbon 0.30 to 0.40, base.....81 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

Cents per Ft.		Cents per Ft.	
2-in. O.D. 12 gage....	15	2¼-in. O.D. 10 gage..	20
2-in. O.D. 11 gage....	16	3-in. O.D. 7 gage.....	35
2-in. O.D. 10 gage....	17	1½-in. O.D. 9 gage...	15
2¼ in. O.D. 12 gage..	17	5⅝-in. O.D. 9 gage...	55
2¼-in. O.D. 11 gage..	18	5½-in. O.D. 9 gage...	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.00	20-lb. coating I. C.	$14.90
8-lb. coating I. C.	11.30	25-lb. coating I. C.	16.20
12-lb. coating I. C.	12.70	30-lb. coating I. C.	17.35
15-lb. coating I. C.	13.95	35-lb. coating I. C.	18.35
		40-lb. coating I. C.	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....3.00c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.75c. to 3.85c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....5.35c.

Galvanized

No. 28 (base), per lb.....5.00c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.85c.

Freight Rates

All freight rates from Pittsburgh on finished iron and steel products, carload lots, per 100 lb.:

Philadelphia, domestic.	$0.32	Buffalo	$0.265	St. Louis	$0.43
Philadelphia, export	0.235	Cleveland	0.215	Kansas City	0.735
Baltimore, domestic	0.31	Cleveland, Youngstown Comb.	0.19	Kansas City (pipe)	0.705
Baltimore, export	0.225	Detroit	0.29	St. Paul	0.60
New York, domestic	0.34	Cincinnati	0.29	Omaha	0.735
New York, export	0.255	Indianapolis	0.31	Omaha (pipe)	0.705
Boston, domestic	0.365	Chicago	0.34	Denver	1.27
Boston, export	0.255			Denver (pipe)	1.215

Pacific Coast	$1.34
Pac. Coast, ship plates	1.20
Birmingham	0.58
Memphis	0.56
Jacksonville, all rail	0.70
Jacksonville, rail and water	0.415
New Orleans	0.67

The minimum carload to most of the foregoing points is 6000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingot and muck bars, structural steel, common wire products including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets, No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Old range non-Bessemer, 51½ per cent iron	5.70
Mesabi Bessemer, 55 per cent iron	6.20
Mesabi non-Bessemer, 51½ per cent iron	5.55

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	10.50c.
Iron ore, Swedish, average 66 per cent iron	10.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	42c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	39c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.25 to $10.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	18.00 to 28.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$110.00
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid	110.00
Spiegeleisen, domestic, 19 to 21 per cent, per ton, furnace	$42.00 to 45.00
Spiegeleisen, domestic, 16 to 19 per cent, furnace, per ton	41.00 to 44.00
Ferrosilicon, 50 per cent, delivered, per gross ton	80.00 to 82.50
Ferrosilicon, Bessemer, 10 per cent, per ton, furnace	43.50
Ferrosilicon, Bessemer, 11 per cent, per ton, furnace	46.80
Ferrosilicon, Bessemer, 12 per cent, per ton, furnace	50.10
Ferrosilicon, Bessemer, 13 per cent, per ton, furnace	54.10
Ferrosilicon, Bessemer, 14 per cent, per ton, furnace	59.10
Silvery iron, 6 per cent, per ton, furnace	32.00
Silvery iron, 7 per cent, per ton, furnace	33.00
Silvery iron, 8 per cent, per ton, furnace	34.50
Silvery iron, 9 per cent, per ton, furnace	36.50
Silvery iron, 10 per cent, per ton, furnace	38.50
Silvery iron, 11 per cent, per ton, furnace	41.80
Silvery iron, 12 per cent, per ton, furnace	45.10
Ferrotungsten, per lb. contained metal	88c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	12c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	$22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	23.50

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$42.00 to $45.00	$37.00 to $42.00
Maryland	47.00	42.00
Ohio	42.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton		6.00 to 7.00

Silica Brick:	
Pennsylvania	42.00
Chicago	49.00
Birmingham	50.00
Ground silica clay, per net ton	8.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)	40.00
Chrome Brick:	
Standard size, per net ton	50.00

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$40.00 to $42.50
Rolling billets, 2-in. and under	40.00 to 42.50
Forging billets, ordinary carbons	47.50
Sheet bars, Bessemer	42.50
Sheet bars, open-hearth	42.50
Slabs	$40.00 to $42.50
Wire rods, common soft, base, No. 5 to ¼-in.	51.00
Wire rods, common soft, coarser than ¼-in.	$2.50 over base
Wire rods, screw stock	$5 per ton over base
Wire rods, carbon 0.20 to 0.40	3 per ton over base
Wire rods, carbon 0.41 to 0.55	5 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10 per ton over base
Wire rods, acid	15 per ton over base
Skelp, grooved, per lb.	2.40
Skelp, sheared, per lb.	2.40
Skelp, universal, per lb.	2.40

Finished Iron and Steel, f.o.b. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, per lb.	2.15c. to 2.25c.
Rails, light, rerolled base, per lb.	1.90c. to 2.00c.
Spikes, $\frac{5}{16}$-in. and larger, base, per 100 lb.	$3.15
Spikes, ½-in., $\frac{7}{16}$-in. and $\frac{3}{8}$-in., base per 100 lb.	$3.15 to 3.50
Spikes, $\frac{5}{16}$-in., base, per 100 lb.	3.15 to 3.50
Spikes, boat and barge, base, per 100 lb.	3.50
Track bolts, $\frac{5}{8}$-in. and smaller, base, per 100 lb.	4.15 to 4.25
Track bolts, ¾-in. and larger, base, per 100 lb.	4.75 to 5.50
Tie plates, per 100 lb.	2.55 to 2.60
Angle bars, per 100 lb.	3.75
Bars, common iron, base, per lb., Chicago mill	2.50c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rails, steel reinforcing, base, per lb.	2.15c. to 2.25c.
Ground shafting, base, per lb.	3.65c.
Cut nails, base, per keg	$3.15 to $3.25

S. A. E. Semi-finished Castellated Nuts and U. S. S. Semi-finished Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

	Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$ 4.80	$ 4.80
$\frac{5}{16}$-in.	5.50	6.00
⅜-in.	6.50	7.00
$\frac{7}{16}$-in.	9.00	9.50
½-in.	11.00	11.50
$\frac{9}{16}$-in.	15.00	15.00
⅝-in.	19.50	20.00
¾-in.	28.50	28.50
⅞-in.	37.00	37.50
1-in.	58.50	60.50
1⅛-in.	88.00	97.00
1¼-in.	132.00	132.00
1⅜-in	176.00	176.00
1½-in.	220.00	220.00

Larger sizes—Prices on application

Alloy Steel

S.A.E. Series Numbers	Bars 100 lb.
2100*(1¼% Nickel, 10 to 20 per cent Carbon)	$3.25 to $3.50
2300 (3½% Nickel)	5.25 to 5.50
2500 (5% Nickel)	7.75 to 8.00
3100 (Nickel Chromium)	4.25 to 4.50
3200 (Nickel Chromium)	6.00 to 6.25
3300 (Nickel Chromium)	8.00 to 8.25
3400 (Nickel Chromium)	7.00 to 7.25
5100 (Chromium Steel)	3.75 to 4.00
5200*(Chromium Steel)	8.00 to 8.25
6100 (Chromium Vanadium bars)	5.00 to 5.25
6100 (Chromium Vanadium spring steel)	4.75 to 5.00
9250 (Silico Manganese spring steel)	3.75 to 4.00
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	5.25 to 5.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.50 to 4.75
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.25 to 4.50
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.25 to 4.50

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb. f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2½-in. sq. there is a size extra of $10 per gross ton; on billets smaller than 2½-in. sq., the net ton bar price applies.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

FABRICATED STEEL BUSINESS

Over 23,000 Tons in New Inquiries and Awards of 13,000 Tons

Orders for 13,000 tons of fabricated steel work and inquiries for 23,500 tons, not including 13,000 tons of plate work for a water pipe line for Portland, Ore., made the past week a notable one. However, October so far does not show the volume of bookings of either September or August, but the fresh additions to jobs under consideration total much more than in any recent weeks. Awards include the following:

Public school No. 108, New York, 1300 tons, to Easton Structural Steel Co.; this in addition to other schools totaling 2600 tons taken by same company, as reported in THE IRON AGE of Sept. 20.

Hayman loft building, Newark, N. J., 200 tons, to Hedden Iron Construction Co.

Bricken loft building on West Thirty-seventh Street, New York, 1000 tons, to Levering & Garrigues Co.

Bricken loft building, on West Thirty-eighth Street, New York, 650 tons, to Harris Structural Steel Co.

Columbia Machine Works, Brooklyn, 600 tons, to McClintic-Marshall Co.

Hudson Towers Hotel, Seventy-second Street and West End Avenue, New York, 2000 tons, to A. E. Norton, Inc.

Grand Street Boys' Club, New York, 125 tons, to Easton Structural Steel Co.

Loft building on West Thirty-seventh Street, New York, 550 tons, to Lehigh Structural Steel Co.

Central Railroad of New Jersey, bridge at Allentown, Pa., 250 tons, to Phoenix Bridge Co.

Apartment building at 1133 Park Avenue, New York, 550 tons, to Paterson Bridge Co.

Jersey City *Journal* Building, Jersey City, N. J., 1000 tons, to Taylor-Fichter Steel Construction Co.

Apartment building on Park Avenue, New York, 750 tons, to Post & McCord.

Southern California Telephone Co., Washington Office Building, Los Angeles, 727 tons, to Ralston Iron Works.

Bridge over Columbia River, Hood River, Ore., 900 tons, to American Bridge Co.

Producers & Refiners Corporation, two 55,000 bbl. oil storage tanks for Oklahoma, 600 tons, to unnamed fabricator.

Middle West Utilities Co., Tulsa, Okla., addition to power house, 322 tons, to Kansas City Structural Steel Co.

Vicksburg, Shreveport & Pacific Railroad, New Orleans, bridges, 300 tons, to unnamed fabricator.

Minnesota State Bridges Nos. 3058 and 3056, 243 tons, divided between Illinois Steel Bridge Co. and Iowa Bridge Co.

Northern States Power Co., St. Paul, Minn., one self-supporting steel stack, 127 tons, to Minneapolis Steel & Machinery Co.

Union Pacific System, one through plate girder span on the Orchard Boise line, 100 tons, to American Bridge Co.

High-Long Building, Columbus, Ohio, 350 tons, to International Steel & Iron Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

City of Portland, Ore., pipe line, 13,000 tons of plates; bids received, but low bid was above estimate of cost. T. A. Gillespie & Co., New York, may receive order for fabrication of pipe if lowest bid on general contract is accepted.

Hurt Building, Atlanta, Ga., 2300 tons.

Section 3, Fourth Avenue subway, Brooklyn, 2500 tons; T. A. Gillespie & Co., New York, low bidder; work not yet awarded.

Baltimore & Ohio Railroad, pier at Baltimore, 3000 tons.

James Monroe High School, Bronx, New York, 3000 tons; bids received but job will be refigured and readvertised.

Ford Motor Co., plant at St. Paul, Minn., 10,000 tons. Figures asked on revised plans.

Milwaukee Gas Light Co., gas holder, 1500 tons.

Garfield Smelting Co., plant, Garfield, Utah, 400 tons.

Grain elevator, Oswego, N. Y., 600 tons, general contract awarded to James Stewart Construction Co., Chicago.

RAILROAD EQUIPMENT BUYING

Promise of Large Volume of Car Orders in Early Future

The crystallizing of railroad car business inquiries is a feature of the steel market. Freight car awards totaled 2100, but definite inquiries appeared for 3850 and expectations of early negotiations covered upward of 40,000 cars. Some of the items are as follows:

The Baltimore & Ohio has inquired for 1000 70-ton mill gondolas, 440 hopper car bodies of 55 tons capacity and 107 40-ton box car bodies. It is expected that this road will inquire for about 4000 cars in all.

The Chicago & Alton has come into the market for 250 gondola cars and 350 gondola car bodies.

The St. Louis-San Francisco has an inquiry out for 2500 refrigerator cars.

The Minneapolis & St. Louis has let a contract to the General American Car Co. for the repair of 600 cars.

The Nickel Plate has ordered 200 steel underframes for cars from the American Car & Foundry Co.

The Long Island Railroad has ordered 60 motor passenger cars from the American Car & Foundry Co.

The Fruit Growers' Express Co., Washington, is disposing of a bond issue of $4,050,000, the proceeds to be used in connection with the construction of 2000 new steel underframe refrigerator cars, each of 40 tons capacity, at its own shops. The company is controlled by the Atlantic Coast Line Railroad Co., Pennsylvania Railroad Co., Southern Railway Co. and other roads. H. B. Spencer is president.

The Southern Pacific is expected to purchase the following equipment before the close of the year: 8730 freight cars, 5000 refrigerator cars, 78 electric cars, 74 steam passenger cars, 32 freight locomotives and 26 passenger engines. The Union Pacific also contemplates entering the market.

The Pennsylvania is expected to issue inquiries for 15,000 cars.

The Long Island has placed 60 motor coaches with the American Car & Foundry Co.

The Rapid Transit Subway Construction Co., New York, is inquiring for 100 steel subway motor cars.

The Chesapeake & Ohio has awarded 6 mail and express cars to the Pullman Co.

The Mexican Petroleum Corporation has ordered 100 10,000-gal. 50-ton tank cars from the American Car & Foundry Co.

The Delaware, Lackawanna & Western has placed 100 box car repairs with the American Car & Foundry Co.

Trade Changes

On Oct. 1 the Salt Lake office of the Sullivan Machinery Co., Chicago, was moved from the Walker Bank Building to the Dooly Block, 121 West Second Street. B. B. Brewster is manager of the inter-mountain territory comprising Utah, Southern Idaho, Eastern Nevada and Western Wyoming.

The Arctic Ice Cream Co., Detroit, has purchased plant and real estate from the Commerce Motor Car Co., embracing four acres of ground at Green, Mackie, Solvay Avenues and the Wabash Railway, Detroit. The modern factory buildings which cover two acres will be immediately converted to the use of the Nizer Corporation, a subsidiary of the Arctic Ice Cream Co., for the manufacture of Nizer automatic refrigerating cabinets. The Nizer factory is at present located at 3980 Gibson Avenue. Production of Nizer products will be quadrupled in the new plant.

The W. O. Conley Electric Co. of Philadelphia will represent the Reinforced Switch & Mfg. Co., Inc., Pittsburgh, in Southern New Jersey and Eastern Pennsylvania.

Interests identified with the Scovill Mfg. Co., Waterbury, Conn., have acquired the entire capital stock of the Hamilton-Beach Mfg. Co., Racine, Wis., one of the largest manufacturers in the West of fractional horsepower motors and motor-driven industrial and domestic appliances. The principal owner was Fred J. Osius, founder of the business, who is retiring to devote his time to extensive real estate interests at Miami, Fla. It is stated that there will be no change in the name or the policy of the Racine works. E. O. Goss has been elected president; T. M. Myers, vice-president and general manager; A. T. Druse, secretary and treasurer, and J. V. Montague, assistant secretary.

The Laughlin-Barney Machinery Co., Union Arcade Building, Pittsburgh, has been appointed Pittsburgh representative for the R. S. Newbold & Son Co., founders, Norristown, Pa.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin	Lead		Zinc	
Oct.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
3.....	13.50	12.87½	41.87½	6.85	6.65	6.65	6.30
4.....	13.50	12.87½	42.62½	6.85	6.65	6.65	6.30
5.....	13.50	12.87½	42.50	6.85	6.65	6.65	6.30
6.....	13.25	12.87½	....	6.85	6.65	6.65	6.30
8.....	13.00	12.75	42.25	6.85	6.65	6.65	6.30
9.....	13.00	12.75	42.25	6.85	6.65	6.65	6.30

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Oct. 9.—The market continues very quiet, with marked weakness in copper, which has declined to 13c., delivered. The tin market has been moderately active, with a slight gain in prices. Lead is steady but dull, and there are no price changes in zinc, which nevertheless is weak and dull.

Copper.—Weakness in the British market has had its effect here. The copper market showed further signs of weakness a few days ago, and sales of Lake were made at 13c., delivered. There has been no marked demand, in fact the market is very quiet and dull. Consumers continue to observe a very conservative policy. They would have no difficulty, it was apparent today, in covering their requirements for the remainder of the year at 13c.

Copper Averages.—Through a typographical error last week, the average price of Lake copper for September was given as 13c. It should have been 13.92c.

Tin.—Although the market has been fairly quiet through the week, there were fair sales, mostly to dealers, between Monday and Friday of last week, more than half of the week's business, totaling perhaps 1000 tons, being negotiated on Wednesday and Thursday, when it became clear that supplies for October delivery would be rather light. Some dealers found themselves short of their requirements and were heavy buyers. From Friday until the close of business today (Tuesday) the market was dull. Spot Straits tin was quoted today at 42.25c., New York. London cables reported quotations there today as follows: Spot standard, £206; future standard, £202 5s.; spot Straits, £209; Singapore price, £203 10s.

Lead.—The market is exceedingly quiet and prices are unchanged. Prices generally quoted are on the basis of 6.65c., St. Louis, and 6.85c., New York, but some sellers are asking as high as 6.95c., New York.

Zinc.—Further weakness has developed in the zinc market, though this has not been reflected in price changes as yet. Quotations are mostly at 6.30c., St. Louis, and 6.65c., New York, but some quotations are said to have been as low as 6.27½c., St. Louis. Efforts are being made by the Joplin ore producers to restrict production, which is in excess of the demand, by shutting down the mines one week of each month.

Old Metals. — Prices are lower and business is very quiet. Holders are generally refusing to sell on the present low basis. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	13.00
Copper, heavy and wire	11.75
Copper, light and bottoms	10.50
Heavy machine composition	10.25
Brass, heavy	7.50
Brass, light	6.00
No. 1 red brass or composition turnings	8.50
No. 1 yellow rod brass turnings	6.75
Lead, heavy	6.50
Lead, tea	5.50
Zinc	5.00
Cast aluminum	16.50
Sheet aluminum	16.50

Nickel.—Quotations on shot and ingot nickel are maintained at 29c., the price of the leading producer, while electrolytic nickel is held at 32c. In the outside market there are some quotations of 28c. per lb. on shot and ingot nickel.

Antimony.—Chinese metal in wholesale lots for early delivery is unchanged at 7.50c. to 7.60c., New York, duty paid.

Aluminum—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 25c. to 26c. per lb., New York, duty paid.

Chicago

OCT. 9.—The market is quiet with tin, lead and zinc lower than a week ago. We quote in carload lots, Lake copper, 14.25c.; tin, 41.50c.; lead, 6.70c.; spelter, 6.30c.; antimony, 9c.; in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11c.; copper bottoms, 9c.; red brass, 8.50c.; yellow brass, 6c.; lead pipe, 5.25c.; zinc, 4.25c.; pewter, No. 1, 22c.; tin foil, 30c.; block tin, 35c.; all buying prices for less than carload lots.

SEPTEMBER STEEL OUTPUT

Daily Rate Only 3680 Tons a Day Below That of August

Steel output in the United States held up well in September, there being a decline of but 2.7 per cent from the rate in August, whereas pig iron output last month showed a falling off of 6.4 per cent. The statistics of the American Iron and Steel Institute, just published, indicate a daily rate of ingot production last month of 132,534 tons, as against a daily average of 136,214 tons in August, the decrease being 3680 tons a day. In August the falling off from July was 4356 tons a day.

The September production of companies which made 95.35 per cent of the country's total in 1922 was 3,159,283 gross tons, which, assuming that the 4.65 per cent not reporting produced the same percentage of the total as in 1922, would mean a September output for the whole country of 3,313,354 tons. Taking the daily rate of 157,776 tons for the year's peak month of April as the basis of comparison, the falling off in the rate of production, as shown by the September returns, is 16 per cent from the high point.

The table below gives the production by months for 1923 of the different kinds of steel, together with estimated daily rate for all companies. Following it is a table showing the production by months in 1922:

Monthly Production of Steel Ingots, January, 1923, to August, 1923, Reported for 1923 by Companies Which Made 95.35 Per Cent of the Steel Ingot Production in 1922

Months 1923	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies, Gross Tons
Jan. ...	2,906,892	728,270	9,467	3,822,369	141,569
Feb. ...	2,613,564	669,903	10,797	3,454,918	143,955
March ..	3,046,309	799,525	12,841	4,046,854	149,883
April ..	2,974,579	772,485	13,933	3,944,412	157,776
May ...	3,136,558	847,418	16,719	4,195,800	155,400
June ...	2,821,239	737,845	15,483	3,748,890	144,188
July ...	2,658,449	680,884	11,496	3,514,241	140,570
Aug. ...	2,796,370*	701,059	9,326	3,677,771*	136,214*
Sept. ...	2,536,972	613,709	8,602	3,313,354	132,534
9 mos.	25,490,932	6,551,098	108,664	33,718,609	144,715

*Revised.

Monthly Production of Steel Ingots, January, 1922, to December, 1922, Reported by Companies Which Made 84.15 Per Cent of the Steel Ingot Production in 1922

Months 1922	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies, Gross Tons
Jan. ...	1,260,809	331,851	822	1,891,857	72,764
Feb. ...	1,395,835	348,571	616	2,071,772	86,324
March ..	1,918,570	451,386	795	2,814,667	104,247
April ...	1,997,465	445,939	1,109	2,902,240	116,090
May ...	2,214,774	494,893	1,474	3,218,794	119,215
June ...	2,143,708	487,851	2,918	3,127,775	120,299
July ...	2,020,572	464,047	2,485	2,952,806	118,112
Aug. ...	1,807,310	464,379	2,893	2,629,256	97,380
Sept. ...	1,911,147	460,127	2,505	2,818,261	108,395
Oct.	2,352,207	518,010	2,198	3,410,265	131,164
Nov. ...	2,360,903	525,945	2,449	3,430,309	131,935
Dec. ...	2,241,104	536,214	2,572	3,300,416	132,017
Total.	23,624,404	5,469,213	22,836	34,568,418	111,511

PERSONAL

George F. Greene, whose appointment as secretary-treasurer of the American Iron, Steel and Heavy Hardware Association was referred to in these columns last week, has taken up his duties at the headquarters of the association, 47 West 34th Street, New York. Mr. Greene is a native of Kentucky and started his business career with the banking house of Strong, Sturgis & Co., serving through the panic of 1907. In recent years his work has been in financial and credit lines and he has had experience in selling and in field work. In 1918 he went with the Midvale Steel & Ordnance Co. as assistant to the vice-president and later became assistant credit manager. His experience in that capacity and his acquaintance in the iron and steel trades will be of material help in his new work.

GEORGE F. GREENE

James L. Gough, for 20 years identified with the machine tool business in Chicago, has been appointed sales manager of the Stocker-Rumely-Wachs Co., that city. Frank R. Taylor, formerly with the Addressograph Co., Chicago, has joined the sales force of the Stocker-Rumely-Wachs Co.

Newman M. Marsilius, who recently resigned as general manager of the Woodstock Typewriter Co., Woodstock, Ill., has been appointed works manager of the Bilton Machine Tool Co., Bridgeport, Conn.

George F. Pichel has established himself as a manufacturers' representative at Rio de Janeiro, Brazil, with headquarters at 50 Avenida Rio Branco.

Milton C. Fidgeon, for several years connected with Joseph T. Ryerson & Son, Inc., has been appointed eastern machinery sales manager, with office at 30 Church Street, New York.

E. B. Hite, formerly general manager Lancaster Steel Products Co., Lancaster, Pa., has been appointed general manager of the Eastern Ohio Mfg. Co., Warren, Ohio, now equipping its plant to manufacture cold rolled strip steel.

Frank Osler, consulting industrial engineer, Indianapolis, has been appointed assistant manager of the factory of the S. F. Bowser Co., Fort Wayne, Ind.

A. W. Gregg, foundry superintendent Whiting Corporation, Harvey, Ill., has resigned to become connected in that capacity with the Bucyrus Co., South Milwaukee, Wis. G. P. Fisher, metallurgist of the corporation, has been appointed to succeed him.

H. Rodemeyer has accepted a position as works superintendent of the Barnes, Gibson, Raymond Corporation, Detroit, manufacturer of springs.

Walter E. Irving, president Irving Iron Works, Long Island City, N. Y., manufacturer of subway grating and steps, entertained the selling organization of the company at a clambake at his home in Glenbrook, Conn., on the evening of Sept. 14. About forty salesmen attended a sales conference at the plant on Sept. 12, 13 and 14.

L. B. Breedlove has been appointed consulting engineer to the bond department of the Chicago Trust Co., to act in an advisory capacity in the analysis of public utility and industrial properties. He will be recalled as the author of several articles having to do with different developments of the Ford Motor Co.'s River Rouge plant.

W. H. Jelley, formerly connected with the eastern Pennsylvania office of the United American Metals Corporation, at Philadelphia, has been transferred to Pittsburgh, where he will manage the sales of Syracuse babbitt metals and Autocrat bushing bronze in western Pennsylvania.

A. A. Loeffler has been appointed manager of sales for the Globe Steel Tube Co., Chicago, in charge of Michigan territory, with headquarters at 5-169 General Motors Building, Detroit. R. R. Lally, formerly of Baltimore, has been appointed manager of sales in charge of Eastern territory, with headquarters at 110 East Forty-second Street, New York.

Bryant A. Rhine, formerly of the Bethlehem Steel Corporation, has become affiliated with Hiram Swank's Sons, Inc., Johnstown, Pa., as assistant to the president, succeeding Albert A. Smith, resigned.

George T. Trundle, president Trundle Engineering Co., has been elected president of the Cleveland chapter of the Society of Industrial Engineers.

Roy L. Kneedler, formerly foundry superintendent Climax Engineering Co., Clinton, Iowa, has been appointed foundry superintendent of French & Hecht, Davenport, Iowa.

Albert Walton, formerly general manager Bateman & Co., Inc., has been appointed general manager and assistant to the president of the Enterprise Mfg. Co. of Pennsylvania, Philadelphia.

H. A. Wilson has been appointed manager of the Detroit branch of the Gibb Instrument Co., Bay City, Mich., vice F. M. Luchs, resigned. Mr. Wilson was formerly New York manager for A. P. Munning & Co.

E. G. Todd of Isbecque, Todd & Co., machine tool merchants, Brussels, Belgium, is spending a few weeks in the United States. During the past week he has been at his firm's New York office at 150 Nassau Street, and this week will leave on a trip to various machine tool plants, whose products he handles in Belgium. Mr. Todd reports that the importation of machine tools by Belgium from the United States is still greatly hampered by the unfavorable rate of exchange.

Edward C. Smith has been appointed manager of pig iron sales, with headquarters at Ironton, Ohio, for the Belfont Iron Works Co., Ironton.

Joseph Wainwright, for many years New England district manager of Manning, Maxwell & Moore, Inc., with headquarters in Boston, has been made Philadelphia district manager. W. B. Lawton, heretofore covering the Hartford, Conn., and Springfield, Mass., districts and that west of Springfield in New England, succeeds him as New England district manager. Mr. Wainwright probably was one of the most widely known machine tool representatives in New England.

William G. Stebbins, a director in charge of purchases and employment manager of the Millers Falls Tool Co., Millers Falls, Mass., was presented with a gold watch last week by the directors of the company in honor of his 50 continuous years with the company.

E. A. Miller, chief engineer Wickwire Spencer Steel Corporation, Palmer, Mass., has resigned to accept a position with the Fisk Rubber Co., Chicopee, Mass.

E. E. Hall has been made general superintendent of the Saco-Lowell Shops, Biddeford, Me., maker of textile machinery.

H. R. Stuyvesant, superintendent of blast furnaces Alabama Co., Birmingham, Ala., for the last four years, has resigned.

H. H. Rogers of Williams, White & Co., Moline, Ill., has been elected chairman of the Tri-City group of the machine shop practice division of the American Society of Mechanical Engineers. Other officers are Charles A. Carlson, Deere & Co., Moline, secretary-treasurer; A. E. Lindburg, Moline Tool Co.; Lawrence Roys, Western Structural Co., Moline; Harry Holsington and D. J. Luckett, Davenport, executive committee.

M. G. Babcock, formerly sales representative of the

Laclede-Christy Co. of Pennsylvania, has succeeded P. M. Offill, resigned, in charge of the Pittsburgh office, Laclede-Christy Clay Products Co. of St. Louis, at 901 Oliver Building.

George M. Verity, president American Rolling Mill Co., Middletown, Ohio, will be the principal speaker at the annual meeting and dinner of the West Virginia Manufacturers' Association at Huntington, W. Va., Nov. 1. His subject will be "Problems of Management."

W. L. Delker, Henderson, Ky., was elected president of the Carriage Builders' National Association at the annual meeting held in Cincinnati, Oct. 3-5. G. W. Huston, Cincinnati, was elected secretary and treasurer.

Harry L. Brunger, works manager Aultman & Taylor Machinery Co., Mansfield, Ohio, for nine years, is now works manager of the Vulcan Plow Co. of Evansville, Ind.

J. B. Doan, president American Tool Works Co., Cincinnati, and A. E. Robinson, works manager, were severely injured in an automobile accident near Utica, N. Y., on Sept. 30. They were riding with W. H. Birdsall, Syracuse, the company's Eastern representative, and Mrs. Birdsall, at the time of the accident. Mr. Doan suffered severe lacerations of the scalp, Mr. Birdsall a broken collar bone, and Mr. Robinson severe bruises. Mr. Doan was taken to a hospital at Utica, but his condition has so improved that he will be able to leave for home this week.

Palmer E. Hanson, formerly superintendent of one of the foundries of the Lakey Foundry & Machine Co., Muskegon, Mich., has become associated with the Cream City Foundry Co., Milwaukee, as general superintendent.

William Ruddy, formerly foundry superintendent Grinnell Co. of Canada, Ltd., Toronto, Ontario, sailed for Paris Sept. 19, to take charge of operations at the new malleable and gray iron foundries of André Citroën.

Charles F. Abbott, recently with the National Aniline & Chemical Co., New York, and previously director of sales of the Celluloid Co. of New York, has been appointed executive director of the American Institute of Steel Construction. Offices have been taken at 350 Madison Avenue, New York. Lee H. Miller, who has been managing director of the institute, will continue as chief engineer and will be in charge of the Cleveland office. The organization is devoted to the promotion of the use of structural steel.

Waldo L. Phillips of F. R. Phillips & Sons Co., iron and steel importers and exporters, will have charge of the company's New York office at 50 Church Street. Mr. Phillips has been in the company's Philadelphia office and recently returned from a trip to the Orient.

H. E. Root, who represents the McClintic-Marshall Co., Pittsburgh; Robert W. Hunt & Co., New York, and F. R. Phillips & Sons Co., Philadelphia, in Yokohama, has cabled his principals that he lost his wife and two children in the earthquake. He is on his way back to the United States.

David Baker, who has been general manager of the steel works at Newcastle, Australia, built some years ago under his direction for the Broken Hill Proprietary Co., Ltd., recently tendered his resignation, which the board of directors received with regret. Mr. Baker felt that his health would not permit him to continue in the performance of his laborious duties. Arrangements were made by which he will take a leave of several months, returning to Australia early in the new year to aid in the reorganization made necessary by his retirement. Later, he will be connected with the company in a consulting capacity. Mr. Baker sailed from Australia for the United States on Sept. 6.

Prof. John Airey of the University of Michigan, Ann Arbor, Mich., has been made a life member of the American Society of Mechanical Engineers for his paper "On the Art of Milling."

Edward A. Langenbach, chairman of directors United Alloy Steel Corporation, has been elected trustee, and H. H. Timken a vice-president of the McKinley National Memorial Association at a meeting held in Canton, Ohio, Oct. 3.

A. L. Johnson, chairman and managing director of Rd. Johnson, Clapham & Morris, Ltd., Manchester, England, manufacturer of wire and hardware specialties, and A. W. Shaw of the same company, are in the United States on a business trip.

Fayette Brown, who has been vice-president of the Stewart Furnace Co., Cleveland, has been elected president of the company to fill the vacancy caused by the recent death of his father, Harvey H. Brown. Harvey H. Brown, Jr., has been elected vice-president to succeed his brother.

OBITUARY

ANTOINE J. LANGELIER, president and treasurer Langelier Mfg. Co., Arlington, Cranston, R. I., died on Sept. 19.

MERRITT ASHMUN POTTER, last survivor of the original incorporators of E. C. Atkins & Co., Indianapolis, died at the Methodist Episcopal Hospital, that city, on Sept. 25, following long illness. He had been prominent in the business and civic life of Indianapolis for more than 40 years. Mr. Potter was born in 1855 at Clarkston, Mich., and attended the University of Illinois. He went to Indianapolis in 1874 and when the Atkins company was incorporated 11 years after, he became treasurer, in which position he remained until becoming secretary in 1911. He held that position at the time of his death. Mr. Potter will be remembered for his many philanthropic endeavors.

CHARLES GIFFORD, sales manager Monarch Steel Castings, Detroit, died at his home, Oct. 2, aged 60 years, after an illness of six weeks. Mr. Gifford came to Detroit from Hudson, N. Y., 25 years ago, and became connected with the casting business. He had been identified with the Monarch company for the last 20 years. The company has not been operating since 1920, during which time Mr. Gifford was in charge of the affairs of the company.

BENJAMIN F. AUFDERHEIDE, SR., president American Sash Weight Foundry Co., Davenport, Iowa, died Sept. 22, aged 65 years.

JOHN GEIST, formerly chief engineer Wisconsin Bridge & Iron Co., and more recently associated with Hool, Johnson & Whitney, general contractors, Milwaukee, died Sept. 30, aged 61 years. He was a native of Norway and was widely known as a designing engineer.

A Tribute to Dr. Henry M. Howe

As a memorial to Dr. Henry Marion Howe a service will be held in the Episcopal Cathedral of St. John the Divine, New York, on Friday afternoon, Oct. 25, at 5 o'clock. The service is intended not only to be a tribute to an eminent scientist, but also to express the relation which exists between science and religion. Dr. Howe was a lifelong churchman and both the authorities of the cathedral and his friends in the engineering societies have desired that this public tribute should be paid to him. A large attendance is expected, and THE IRON AGE urges that there be a special effort to make it representative. The service comes at the close of the afternoon session of the American Iron and Steel Institute's October meeting in New York, and all members of the institute are asked to join in the cathedral tribute. The principal address will be made by Dr. Michael Pupin of Columbia University.

Strong Plea to Give Railroads a Rest

President of American Railway Association Urges Cessation of Political Agitation and Legislation, Declaring Ample Regulation Is Now Provided

BOSTON, Oct. 9.—A period of rest from political agitation and legislation in order to permit the railroads to demonstrate to the public what they can do under the present system of regulation was urged tonight by R. H. Aishton, president of the American Railway Association, addressing the New England Railroad Club.

"With the Government, through its different bodies—that is, Congress, the Interstate Commerce Commission, the Railroad Labor Board and the various State railroad commissions—exercising complete control over the question of rates charged by the carriers; the amount paid for labor by the carrier; their income regulated to a 'fair return' to be determined by a Government institution; the value of the carriers' property, upon which the fair return is based, also determined by the Government; with the power vested in a Government body to determine whether or not the management is 'honest, efficient and economical' and 'expenditures for maintenance of way and structure reasonable'; with the question of whether or not stocks and bonds are to be issued and, if so, in what amount, governed by the Government, and with all favoritism or unjust discrimination in favor of any of the carriers' patrons expressly forbidden, can anyone with reason contend that the carriers are not now under existing law adequately regulated, or that any interest of the shipping public is not fully recognized and adequately protected? If, then, no such reasonable contention can be made, should the carriers not be given a period of rest from political agitation and legislation, and be permitted to demonstrate to the public what they can do under this system of regulation?"

Common Sense Needed

Application of "common horse sense treatment" in meeting the economic situation in certain sections of the country, for which "high freight rates" have been blamed, was urged by Mr. Aishton. As an illustration, he said a drop some time ago in shipments of seed potatoes from Maine to the Southern trade was blamed on freight rates by farmers and shippers in that section of the country. To ascertain the actual situation, he said, President Todd of the Bangor & Aroostook Railroad proposed to the Aroostook Potato Growers' Association that if it would select a competent man to investigate the real reason, the railroad would pay all expenses. A man unknown to the railroad officials was selected and after visiting most of the Southern States, he made a report to the Potato Growers' Association which was practically to the effect that freight rates had nothing whatever to do with Maine losing the seed potato traffic, but that the real responsibility rested on the potato shippers themselves.

Farmers Know Real Trouble

"The result is," said Mr. Aishton, "that the farmers of Aroostook County now know what the trouble is, have quit their talk about freight rates and are devoting their attention to providing the real remedy for the discovered trouble. There isn't any question that arises regarding any phase of transportation, either in Kansas, Texas, or the State of Maine, or even Minnesota, whether affecting potatoes or wheat, or what-not, that isn't susceptible of similar treatment.

"Some time it will be found that the remedy may and does exist in the transportation company. The railroads are just as glad to know this as anybody else. On the other hand, a great many of the half-baked and unproven ideas that are today perverting the minds of the people in various sections of the country, when submitted to this analysis, are completely and satisfactorily corrected. You will find that the American people as a whole recognize the truth and truth will prevail."

Regarding the program unanimously adopted by the railroads of the country last April in New York "to provide adequate transportation service in 1923," Mr. Aishton said that substantial progress has been made in carrying it to success.

Heaviest Car Loading

"Loading of revenue freight," he said, "from Jan. 1 this year to Sept. 1, inclusive, has been the heaviest for any corresponding period in history, being 5,554,042 cars in excess of the same period in 1922; 7,407,172 cars in excess of 1921, and 3,248,151 cars in excess of 1920. In this period for 12 weeks this year, loading has been over 1,000,000 cars a week, with a peak loading for the week ended Sept. 1 of 1,092,567 cars, which really means that when you take into consideration the cars awaiting repairs, the cars held in grain districts for loading (and practically out of service for a time), that every available car in this country was loaded, moved to its destination, unloaded and put back for another load in less than two weeks.

"The railroads also from Jan. 1 this year to Sept. 1 installed 116,117 new freight cars and 2,583 new locomotives, while they also have on order with deliveries being made daily 72,906 new freight cars and 1517 new locomotives. When it is considered that this financing of equipment was very largely done through borrowed money; that the return of the roads has been less than 5¾ per cent on their valuation, it must be evident that the railroads making these vast capital expenditures are dependent on the fairness and self interest of the American people.

Progress of Repairs

"The program also provided that locomotives awaiting heavy repairs be reduced to 15 per cent by Oct. 1. This figure was met on Sept. 1 and is now in the neighborhood of 14.7 per cent, the lowest number of locomotives held for repairs since the Car Service Division has had records.

"The program further provided that every effort should be made to bring down the percentage of freight cars awaiting repairs to 5 per cent by Oct. 1. On Sept. 1 it was 7.7. When the figures are compiled for October, it will be somewhat less than that. Despite the handling of a peak business this year, there has been a surplus of equipment in good repair and ready for business at all times, and there has not been a single day that the entire transportation requirements have not been reasonably well met."

Mr. Aishton said that on Sept. 1 the average load per loaded car was 28½ tons, which exceeds that for the same time last year by 3½ tons and 1921 by 1 ton. The average movement per car is also 7 miles per day over 1922 and 6 3/10 miles per day over 1921.

Under orders of the Car Service Division, he also said the Eastern and Southern lines delivered to Western lines through the gateways of Chicago and St. Louis alone, from April 16 to Sept. 23 this year, 114,530 empty box cars belonging to Western railroads, as well as 27,200 box cars owned by Eastern lines to be used for the movement of crops. There has been no complaint as to shortage of box cars or refrigerator cars in any territory up to this time.

Despite the fact that the plant of the British Empire Steel Corporation, Sydney, N. S., is actively engaged and the company is contemplating blowing in an additional blast furnace, and plans putting in operation another battery of coke ovens, the company has closed down another slope of its Bell Island iron mines, throwing some 300 men out of employment. This is the second time within a few weeks that mining operations have been curtailed.

Week Devoted to Management Problems

Management Week will be observed throughout the country beginning Oct. 22, and meetings in leading industrial centers are being planned. Organization of the country into 17 areas under the direction of a national committee is proceeding from headquarters in Cleveland, John Younger, representing the American Society of Mechanical Engineers, being chairman of the committee. Other members are V. P. Geffine, National Association of Cost Accountants; J. F. Price, Society of Industrial Engineers; Keppele Hall, Taylor Society, and D. W. K. Peacock, American Management Association.

Two meetings will be held in New York and Chicago and in central Ohio a series of meetings will be held under the auspices of Ohio State University. Pittsburgh, Atlanta, Birmingham, St. Paul, Minneapolis, Memphis, Chattanooga, Boston and Seattle are other cities in which meetings will take place. A two-day meeting will be carried out in Detroit under the direction of the Society of Industrial Engineers. Nebraska and other State engineering bodies are also arranging management events. During the week a meeting will be held at Tulsa, Okla., in connection with the International Petroleum Exposition.

The general aim of management week is to promote the science of management, which has developed rapidly and now includes problems not only of production, but of finance, purchasing, sales, accounting and personnel administration. "Can management be measured?" is one of the questions which will be discussed.

New England Foundrymen's Association

The New England Foundrymen's Association held its regular October meeting on the evening of the tenth at the Exchange Club, Boston. George Furman, sales manager Beardsley-Piper Co., Chicago, was the chief speaker of the evening. His talk was on sand machinery and its uses and covered a wide range of foundry work, including general jobbing, automobile cylinder, sanitary ware and harvesting machinery molding operations, and was illustrated with moving pictures.

Walter M. Saunders, Saunders & Franklin, Providence, R. I., and R. F. Harrington, Hunt-Spiller Mfg. Corporation, South Boston, both members of the committee on standardization of sands, etc., American Foundrymen's Association, also were speakers, on the subject of sands and the benefits to be derived from practices outlined by the committee. The meeting was largely attended.

Welding Society to Meet in Pittsburgh

The American Welding Society will hold its third fall meeting at the Fort Pitt Hotel, Pittsburgh, Oct. 24 to 26. Welding in all of its phases will be discussed and inspection trips will be a feature.

An industrial application session will include a report on the industrial applications of welding and its possibilities by E. H. Ewertz, general manager, Moore Plant, Bethlehem Shipbuilding Co., Elizabeth, N. J. T. F. Barton, master mechanic, Delaware, Lackawanna & Western Railroad, and president of the society, will address the convention on the "General Relations of the Society to the Industry," and C. A. Adams, director American Bureau of Welding, will speak on the "Technical Work of the Society." The fall dinner will be held on the opening day.

The arc welding of non-ferrous metals, structural steel and thin sheet metal, the speed and cost of welding, and standards of arc welding will be discussed at a meeting of the electric arc welding committee, and a review of available information on the gas welding of pipe lines and manganese steel will be presented at a session of the gas welding committee. It is expected that at the meeting of the committee on the training of operators the course on the training of arc welders will be completed. This course will be similar to the course for the training of oxy-acetylene welders, which was outlined in THE IRON AGE of May 3, page 1304.

An inspection trip to the Homestead works of the Carnegie Steel Co., which will include a visit to the open-hearth, blooming mill and welding divisions, is planned for Oct. 26. A trip will also be made to the plant of the Westinghouse Electric & Mfg. Co., East Pittsburgh. Luncheon will be provided by the Westinghouse company. Members of the society have been invited to attend the annual dinner and meeting of the Pittsburgh Railway Club, to be held Oct. 24.

"Welding and Insurance" is the subject of a paper by A. D. Risteen, director of technical research, Travelers' Insurance Co., which will be presented at the last session. The paper explains the attitude of the insurance companies toward gas and electric welding, and outlines the relation between welding and insurance in the past. The "Railroad Situation" will be discussed at this session by G. D. Ogden, traffic manager, Pennsylvania System, Pittsburgh.

The fall meeting of the Eastern States Blast Furnace and Coke Oven Association held at the Westmoreland Country Club, Pittsburgh, Friday, Oct. 5, was featured by a paper, "Combustibility of Coke," by Harold J. Rose, Koppers Co. laboratory, Mellon Institute of Industrial Research, Pittsburgh. Mr. Rose touched upon the laboratory methods of testing coke and also attacked the claim made in some recent Government reports that combustibility was not a factor in coke. Discussion of the paper converged on the latter phase with several attachés of the Bureau of Mines participating. E. T. Vogel, Youngstown Sheet & Tube Co., Youngstown, president of the association, was chairman of the meeting.

COMING MEETINGS

October

American Society for Steel Treating. Oct. 8 to 12. Annual convention, Motor Square Garden, Pittsburgh. W. H. Eisenman, 4600 Prospect Avenue, Cleveland, secretary.

American Engineering Council of the Federated American Engineering Societies. Oct. 12 and 13. Meeting at Rochester, N. Y. L. W. Wallace, 26 Jackson Place, Washington, secretary.

West Virginia and Kentucky Association of Mining, Mechanical and Electrical Engineers. Oct. 19 and 20. Third annual convention, Hotel Frederick, Huntington, W. Va.

American Society of Mechanical Engineers. Oct. 23 and 24. Regional meeting, Chattanooga, Tenn. E. C. Patterson, general manager Chattanooga Boiler & Tank Co., Chattanooga, in charge of details.

National Association of Farm Equipment Manufacturers. Oct. 24, 25 and 26. Thirteenth annual convention, Statler Hotel, Cleveland. J. B. Bartholomew, Peoria, Ill., president.

American Welding Society. Oct. 24, 25 and 26. Fall meeting, Pittsburgh. M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

American Iron and Steel Institute. Oct. 25, fall meeting in New York; Oct. 26, visit to Aberdeen Proving Ground, Md. E. A. S. Clarke, 40 Rector Street, New York, secretary.

Society of Automotive Engineers. Oct. 25 and 26. Production meeting at Cleveland. Coker F. Clarkson, 29 West Thirty-ninth Street, New York, general manager.

American Gear Manufacturers' Association. Oct. 25, 26 and 27. Fall meeting, Mountain House, Lake Mohonk, N. Y. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

American Management Association. Oct. 29 to Nov. 1. Annual convention, Hotel Astor, New York. W. J. Donald, 20 Vesey Street, managing director.

MECHANICALIZATION

For Coal Mine and Other Labor Ills—Average Mentality the Factor

Asserting that the preponderance of the nation's workers are subnormal, Thomas A. Stroup, superintendent of the Utah Fuel Co., Clear Creek, Utah, says, in a survey of the cause and growth of unionism among the coal miners, prepared for the American Institute of Mining and Metallurgical Engineers, that unionism, called "an unnatural condition," can be checked in the mining industry by a thorough mechanicalization of the mines.

"The first steps in checking the spread of unionism in the coal mines and in restoring the industry to a sound position, on labor at least, will be," says Mr. Stroup, "to abolish the contract system, to mechanicalize the mines thoroughly, to standardize every operation down to the minutest detail so that no responsibility of any kind will fall on the worker.

"In the metal mines the tradition of the individual miner, capable and responsible, has been abolished, the mines have been thoroughly mechanicalized, all operations have been standardized, nothing has been left to the initiative or judgment of the miner himself.

"The trade of metal miner has ceased to exist; they are now all mine workers fitting into the niches and conforming to the routine laid out by their managers, and are certainly more efficient, more contented, and happier than in the old days of the individual worker. Engineers have brought these things about even though they were not always cognizant of the fundamental reasons for their desirability.

"In coal mining, on the other hand, the tradition of the individual worker has been maintained, even extended; mechanicalization has been very slowly and reluctantly brought about; operations at the face are left to the judgment of the miner himself. The influence of the engineer has scarcely been felt in the coal mining industry. This has caused to exist a group of skilled workers intensely jealous of their special knowledge and easily maintained in compact organizations for the purpose of preventing other men from acquiring or utilizing this special knowledge, and incidentally of exploiting their employers.

"The parallel between the metal workers and the railroad employees is exactly the same as between the two groups of miners. The metal workers have been made to fit into vast routine organizations, but the tradition of individual skill still holds the railroad workers in its grasp; that element has not been removed from train operation.

Routine Maker of Machine Parts Notably Contented.

"But the routine maker of machine parts is apt to be more pleased with his job, more contented and in every way better off personally than the skilled railroad man, with his exaggerated ideas of his own consequence and his exercise of individual judgment, initiative and skill; things made so much of by ignorant social workers and union leaders, but which perhaps not more than one-fourth of even this relatively intelligent group possess the natural brain equipment continuously to perform with safety to their mental equilibrium.

"This condition is closely related to the breakdown of certain intellects under the strain of modern civilization, and the fact that the routine worker relieved of the stress of making independent decisions keeps his mental poise much better than the responsible worker. Not the least of the crimes of our educational system has been to teach the mental equality of men."

It has been shown, according to Mr. Stroup, that 50 per cent of the nation's population is under development mentally, and that it is incapable of self-direction or of exercising independent judgment. It is probable, he says, that from 80 to 90 per cent are incapable of clear thinking or self-direction. In view of this, he finds the great success of the modern factory system not surprising, and the cause of the failure of all the well intentioned schemes of employee participation in management, profit sharing, etc., is made clear.

"This simple fact of the preponderance of the subnormal in our working population," he continues, "must be the point of departure for all successful schemes of employer-employee relationship, and its full import and significance must be grasped by every industrial manager. It must also be the basis of an education system to supersede the present nightmare of experiments in public schools and of many things, social and political; but this knowledge also brings greater responsibility to management and greater opportunity for service to mankind, a responsibility and opportunity which past experience tells us will not be shirked."

Employment Conditions

In the September report of the Industrial Commissioner of New York State employment in the State is compared with the high point of 1919-20 and the low point between 1920 and 1922. Based on the earlier high point as a 100 per cent, only two of the 12 items in metal working industries are now above 100, these being heating apparatus at 125 and railroad equipment and repairs at 102. These reached a low point during the intervening period at 62 per cent and 44 per cent respectively, the low being in each case about 20 months previous to the present high. All other items show a considerably lower employment volume now than in 1919-20, as indicated in the table:

Industry	Percentage Based on High Points of 1919-20 Low of 1920-22	High of 1922-23
Shipbuilding	19	32
Iron and steel	24	82
Firearms, tools and cutlery	32	62
Automotive	44	66
Railroad equipment and repairs	44	102
Structural iron and steel	48	80
Jewelry and silverware	49	69
Instruments and appliances	50	86
Sheet metal and hardware	51	82
Machinery and electrical goods	54	84
Brass, copper and aluminum	55	90
Heating apparatus	62	125

Heavy building construction accounts for the very high position of heating apparatus. Sheet metal and hardware and structural iron and steel fall also into this same building movement.

Graphite Crucibles of American Materials

As the result of experiments conducted by the Department of the Interior, through the Bureau of Mines, it is indicated that American graphites, bonded with American clays, can be used in substitution for foreign graphites in the manufacture of crucibles for the melting of steel.

In the past, American crucible makers have given preference to graphite imported from Ceylon and Madagascar, the Ceylon graphite having been preferred, when available. In the Bureau of Mines experiments, made under the direction of the Ceramic experiment station, Columbus, Ohio, graphites from Alabama, Texas, Montana, New York, and Canada were tested in comparison with graphites from Ceylon and Madagascar. When all factors were taken into consideration, the Texas and Alabama graphites gave superior service to those from foreign lands. The analysis of the steel after the first melts showed that the Texas and Alabama graphites carbonized the steel less than did the graphites from Ceylon. This low-carbonizing feature is important because it permits the production of a steel of more nearly the desired analysis. A preliminary report of these experiments is given in Serial 2512, "Graphite from steel-melting crucibles," by R. T. Stull and G. A. Bole, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

The Standard Tank Car Co., Sharon, Pa., has secured a large order for box cars from the Ford Motor Co., and is maintaining operations at its plant at close to normal basis, with assurance of continuing on this schedule with present orders on hand until well after the first of the year.

Foundrymen Tour France and Belgium*

Industries Going Forward in War-Racked Districts—Visits to the Famous Cockerill Works, the Harvester Plant at Lille and to a Historic Fort

BY HENRY M. LANE

PARIS, FRANCE, Sept. 25.—You will be interested in some account of the trip through France and Belgium taken by the Americans who attended the recent international congress of foundrymen.

I joined the party here in Paris after the convention and we left on the night of Sept. 18, going to Nancy. The next morning we visited a salt mine about 12 miles from Nancy. We went down to a depth of 570 ft. and saw them mining salt by the present methods. We also saw the old workings where they used to mine by a combination of washing and entering by means of water and then subsequently blasting against this opening from the sides. This method had to be abandoned about 45 years ago on account of the fact that the salt is underlaid with a marl. The water softened the marl and some of the pillars crushed into the marl causing a partial cave in the mine. The French Government then passed a law against this method of mining. At present they are mining by the regular pillar and stall method by which they remove 75 per cent of the salt, and they are working a vein approximately 20 ft. thick. The salt measures themselves are several hundred feet deep, but the upper part is not pure enough to be mined for packing salt.

After looking at some of the galleries, of which there are over 20 miles in a mine, we were taken to a chamber fitted up as a reception room and there found a table of salt on which were set out for our lunch delicious cakes and champagne. Each member of the party was also given choice samples of rock salt.

On the surface we were shown two plants where table salt or cattle salt was being made by evaporating brine solutions. One of the plants was using the waste heat from the soda works.

In the afternoon we visited a cut glass works, and saw the entire process of making beautiful cut glass ware, including vases having two colors of glass, one laid over the other. They were subsequently cut in such a way as to make beautiful patterns of the two colors. This plant specializes in wine glasses, tumblers and perfume bottles.

Over Historic Battle Grounds

The next morning we took motor cars to see the battle front, back of Verdun. We passed a portion of the Argonne Forest where the American soldiers fought, and visited two American cemeteries, one containing 6000 graves and the other 14,000. After visiting a number of the towns that had been destroyed, we came to a German officers' headquarters where we saw their massive concrete dug-outs and underground hospital for first aid; later circling through the battlefields up the ravine known before the war as the "Ravine of the Lady" and during the war as the "Valley of Death." All along this front the trenches are still intact and the dug-outs in position, though many of them are caving in. The wire entanglements are just as they were left, the French entanglements being supported by wooden staves, and most of those of the Germans by steel staves. We visited Fort Dumo, one of the two forts taken by the Germans; then motored to Verdun where we had tea. I forgot to say that we had lunch at St. Mihiel, which was the point from which the American troops started their first principal offensive.

After tea at Verdun we motored to Metz. This region between Nancy and Metz was the principal steel making region of France before the war. The Germans showed a great deal of spite in the way they destroyed plants in this region. At present a considerable number of the blast furnaces are in operation, but many are idle on account of the lack of coke.

Through Luxemburg to Belgium

We had only a few hours in Metz on Friday morning and after that took train for Liege. This brought us through Luxemburg. There was a decided contrast between the condition of the country we had passed through in France, which had been so thoroughly destroyed by the Germans, and the little country of Luxemburg which showed no destruction. As soon as we passed the Luxemburg border into Belgium we began to see signs of terrible destruction and some of our party were able to tell us of the way in which the various mills and mines which we passed had been wrecked.

We reached Liege in the evening and the next morning were taken in charge by the Belgian Foundrymen's Association. President I. Léonard was ably seconded by Marcel Remy and Hyacinthe Proyard, together with other members of the association. The members were given the choice of visiting a number of works, including a brass mill, a pipe foundry, the National Arms Works where typewriters, automobile castings, firearms, and many other products are turned out.

Large Use of Gas Engines

The largest party visited the noted Cockerill Works. This company has its own coal mines, iron mines, blast furnaces, steel mills and general engineering works. In the power plant are two pairs of gas engines, each engine being of 8000 hp., the two pairs representing a total of 32,000 hp. In addition to this they have something over 40,000 hp. of other gas engines operating smaller electrical units for blowing air for the blast furnaces.

This region has an exceedingly interesting arrangement for the general distribution of power to the different industries. The current generated by blast furnace gas at the different blast furnaces and by-product gas at the coke ovens is all handled through central stations so that each concern can draw from the central what it requires and the balance of the power is turned over to the public utility corporations. An arrangement of this kind tends to conserve coal.

The party were much interested in the gray iron and steel foundries at the Cockerill Works and also in the extensive machine shops.

After lunch the Belgian Foundrymen's Association had a rare treat arranged for the visiting members. The party was taken in automobiles to the fort which was the last to surrender, and here they were conducted through the fort by the commander who was in charge of it at the time of the surrender. The Germans had cleared up some of the débris about the fort and arranged steps and walks so as to use it as a show place to illustrate how destructive the German cannon were. But the value of the fort is well shown when one considers that for six days the commander had very little difficulty in silencing every battery of guns that the Germans brought into action against him, preventing the Germans from moving toward Brussels, since he had both the wagon road and the railroad under his guns.

The Germans finally constructed heavy concrete foundations in the town and mounted 42 cm. guns on them. They also arranged for simultaneous fire from many batteries of smaller caliber from positions covering approximately two-thirds of a circle surrounding

*Extracts from a private letter from Mr. Lane to friends in the United States. Mr. Lane has been engaged for some time on the erection of a large foundry at the Citroen automobile plant in Paris.

the fort. For 26 hours the fort was under continuous bombardment, with an average of between 20 and 30 shells a minute falling on it. In spite of this terrific bombardment, it was not until several direct hits had been made by the 42 cm. shells that they were able to do any material damage, the final destruction of the fort being caused by the explosion of its own magazine. The garrison consisted of only 550 men, of whom 176 are still alive. Practically every man in the fort at the time of the explosion of the magazine was wounded, and they were subsequently taken prisoners. Approximately one-half of the garrison were killed by the explosion of the magazine, and today lie buried under the ruins of the fort.

In spite of the terrific bombardment none of the gun turrets was put out of business until the explosion of the magazine, though several of them show evidence of having been struck by large shells which exploded on the surface of the turrets.

Dinner With Belgian Foundrymen

In the evening the Belgian Foundrymen's Association gave their visitors a dinner which will long be remembered. The dinner was all that could be asked in every respect, but what will always remain with the visitors was the evidence of hearty good fellowship and the way in which our Belgian friends entertained us with singing and recitations in both the languages spoken there.

On Sunday morning the party took train for Brussels and on Sunday afternoon were shown the many interesting sights of this old city, ranging all the way from a view of a portion of the old wall which was built in the ninth century down to many points of interest in connection with the recent war. Probably the thing which touched both British and American members most was a visit to the place where Edith Cavell met her fate. Few of us realize that on this same spot over 50 others met a similar fate, including a French nurse who was killed in the same way.

A fitting climax for this day was a visit to the site where the balloons for the James Gordon Bennett cup race were sent up. The day was anything but suitable for a balloon race. During the afternoon there were many little showers and the wind was irregular on the surface, though it blew at a considerable speed on a higher level. The balloons were far too close together and this resulted in such damage to two of them that they could not go up, and we could not help but feel that the race should have been postponed. Subsequent accidents certainly bore out this belief.

Harvester Company's French Plant

On Monday morning the party left the charming Belgian capital for Lille, where they were met by representatives of the International Harvester Co. After lunch at the hotel the party went by automobile to the plant of the International Harvester Co., and all were much interested in seeing this typical American plant operating in a French setting. Naturally, the foundrymen spent most time in the gray iron and malleable foundries.

After a visit to the works, refreshments were served and a very delightful hour spent with the host of the occasion. The party then returned to the hotel and all were tired enough to turn in early. On Tuesday morning they came by rail through the battle-swept section down to Paris. Though the French have done an almost unbelieveable amount of work in the rebuilding of this region, there is still much to see as a result of the terrible destruction due to the heavy fighting which took place here. In one place close to the track an abandoned tank was left in the position where it had been stopped by shell fire, and every town showed sections which were still in ruins.

President Clamer and several other members left the party in Brussels and went to Switzerland, while other members tarried in Belgium. Three members of the British Foundrymen's Association accompanied the American party.

Jones & Laughlin Steel Corporation's Service Station at Memphis

PITTSBURGH, Oct. 8.—The Jones & Laughlin Steel Corporation late last week exercised an option it recently took on an 8-acre site on the Mississippi River at Memphis, Tenn., on which it will soon begin the construction of a steel distributing and storage depot with rail and river terminal, which will be used as a service station in supplying the South and Southwest with the company's products. While this terminal is primarily for the purpose of handling and stocking barge shipments of the company and full advantage will be taken of the river stages to ship as heavily as possible that way, the company also plans rail shipments to that point. The company for the past two years has made Memphis the Southern terminus of its river shipments for transfer by rail to interior Southern and Southwestern points and this experience has disclosed that Memphis enjoys exceptional railroad freight rate advantages for distribution in this manner. Establishment of the terminal for the company's own use, W. T. Mossman, who directs the Jones & Laughlin down river shipments, says, does not mean that it is proposed to compete with the existing municipal terminals and indeed that the company would probably from time to time continue to use the public terminals in addition to its own facilities.

The Jones & Laughlin terminal site is on the Wolf River industrial canal, Memphis Harbor, a short distance north of the municipal terminal, and is served by the Illinois Central and Belt Line railroads, the latter running around the city of Memphis and affording connections with nine trunk line roads operating in and out of that city. In addition to railroad distribution facilities, Memphis also is a port of call of the Federal Barge Line, which will enable the company to ship steel by river to New Orleans and for export from that point.

The company's next river shipment, to consist of nine steel barges each of 850 tons capacity in tow of the steamer Warren Elsey, is scheduled to leave the company's steel mills on the Ohio and Monongahela Rivers here during the last week of this month for Louisville, Evansville, St. Louis and Memphis. At these cities, the contents of the barges will be distributed inland by rail. Considerable material for the Texas and Wyoming oil fields is being delivered in this manner, going from 1000 to 1200 miles by river and 1100 to 1300 miles by rail. This tow will participate in the formal opening of the new floating terminal at Memphis on Nov. 15.

Electric Smelting of Zinc Ores

The electric smelting of zinc ores for the production of spelter can now be termed metallurgically feasible, according to B. M. O'Harra, associate metallurgist of the Department of the Interior, attached to the Mississippi Valley experiment station of the Bureau of Mines. The question of cost then becomes of paramount importance. Up to the present time, the plants in Norway and Sweden are the only ones that have been able to achieve commercial success. Little data on their costs are available, but the plants have been able continuously to maintain and expand their operations during more than 15 years. They are favored by having very cheap power available, and it is probable that their process would not be commercially practicable in this country. Judging from published reports, their metallurgical results are not as good as have been obtained in much of the work in this country. Mr. O'Hara has begun a study of the electrothermic metallurgy of zinc, under a cooperative agreement between the Bureau of Mines and the Missouri School of Mines and Metallurgy. The results of a preliminary survey of the situation are given in Bulletin 208, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

Machinery Markets and News of the Works

JAPANESE INQUIRIES

Cincinnati Lathe Builder Asked to Quote on 100 Machines

Japanese Houses in New York Receiving Many Cables Regarding Tools

Many interesting cables are being received from Japan, principally by the large Japanese importing and exporting houses, regarding purchases of machine tools to replace those destroyed in the earthquake. A few machines, urgently required, have been sold, but it is believed that the bulk of the prospective buying will not materialize for weeks or possibly months. A Cincinnati machine-tool builder has received an inquiry for 100 engine lathes in sizes ranging from 12 to 60 in. This is regarded as a bona-fide inquiry, with fairly good prospects of the business being closed.

While there is little, if any, definite improvement in the volume of current machine-tool orders, inquiries are more numerous. Many projects are in the formative stage and may not develop until late in the year or early next year, but the mere fact that more manufacturers are figuring on the purchase of additional equipment has created a more hopeful feeling.

Automobile manufacturers are today's principal buyers, and are expected to place further orders in anticipation of next year's operations. The Rickenbacker Motor Co., Detroit, bought about 20 turret lathes. The Buick plant is buying considerable equipment and the Maxwell Motor Sales Corporation is expected to buy shortly for an Indiana plant. The Willys-Morrow Co., Elmira, N. Y., is an active buyer.

There continues to be a moderate amount of railroad buying, but action on several large lists that have been pending for some time is still deferred. The Nickel Plate, which came into the market a few months ago for about 15 machines, has placed the bulk of this business with a Cleveland machinery dealer. The Pittsburgh trade is hopeful that orders will be distributed this week by the Pennsylvania Railroad against a recent inquiry for 34 tools.

New York

NEW YORK, Oct. 9.

MACHINE-TOOL business continues very dull. There is neither inquiry nor buying of importance. Machine-tool builders who attended the convention of the National Machine Tool Builders' Association at Lenox, Mass., last week visited in New York on their way back to their homes and reported conditions throughout the country very quiet. A few stated they had received fairly good orders recently from automobile companies, but other industrial companies and the railroads are placing very few orders. The Southern Pacific last week inquired here for three engine lathes for Western shops. The Pennsylvania Railroad bought a heavy duty planer, 42 x 42-in. x 16 ft., for its lines West. A number of interesting cables have come from Japan regarding the machine-tool requirements of that country to replace equipment destroyed in the earthquake. A few machines have already been ordered here, but the bulk of the expected buying, it is believed, will not develop for weeks or months.

The Unique Art Mfg. Co., 60-66 Shipman Street, Newark, N. J., is in the market for a 100-hp. portable type, horizontal, return tubular boiler. It also needs an oil-storage tank of about 5000 gal. capacity.

Plans are being prepared by the Rubel Coal & Ice Corporation, 197 Glenmore Avenue, Brooklyn, for a new two-story ice-manufacturing plant, 125 x 150 ft., at 50-60 Lorimer Street, estimated to cost $500,000 with machinery. E. M. Adelsohn, 1770 Pitkin Avenue, is architect.

The Reo Motor Car Co. of New York, Inc., 1709 Broadway, New York, will take bids for its proposed six-story branch, 100 x 170 ft., with service and repair departments, on West Fifty-fifth Street, estimated to cost $200,000, with equipment. Parker & Shaffer, 280 Madison Avenue, are architects. R. H. Scott is president.

The Patron Machine & Millwright Co., 118 Centre Street, New York, plans the purchase of additional woodworking and saw machinery. E. Paton heads the company.

The Adirondack Power & Light Co., Amsterdam, N. Y., is planning extensions in its plant and system to cost approximately $3,000,000. The work will include an addition to the steam-operated electric power plant on the Mohawk River, South Amsterdam, to increase the capacity 40,000 hp.

J. A. Franklin & Sons, 722 Broadway, Schenectady, N. Y., are taking bids for a one-story machine and repair shop, 75 x 93 ft., to cost $15,000. L. R. Nichols, 125 Broadway, is architect.

The Consolidated Gas Co., 130 East Fifteenth Street, New York, has purchased land extending from Halleck Street and East Bay Avenue to the Bronx River, totaling 40 city blocks, as a site for a new gas manufacturing plant, with steam power house, generator, etc., estimated to cost more than $1,500,000.

The Todd Dry Dock & Construction Corporation, 25 Broadway, New York, has leased the dry dock of the United States Shipping Board at Weehawken, N. J., for extensions in its ship repair plant.

Hochman & Barr, 305 Monroe Street, New York, will commence the construction of a one-story machine shop, 25 x 100 ft., at 30 Jackson Street, for which plans have been prepared by Levey & Berger, 375 Fulton Street, architects.

The Queens Borough Gas & Electric Co., Rockaway, L. I., is disposing of a bond issue of $2,000,000, a portion of the proceeds to be used for extensions in electric plants and system. Carleton Macy is president.

Electric power equipment, conveying, and other machinery will be installed in the new plant to be established at Hudson, N. Y., by the Canada Dry Ginger Ale, Inc., 544 West Thirty-eighth Street, New York, which has acquired a building, 100 x 300 ft., with 7-acre tract.

The Hoboken Paper Mill, Inc., 151 Fifth Avenue, New York, is reported to be planning to rebuild the portion of its plant at Goulds Station, Hudson, N. Y., recently destroyed by fire. The work, with machinery, is estimated to cost $250,000.

The Alderton Dock Yards, Ltd., 518 Hamilton Avenue, Brooklyn, operating a shipbuilding plant, has leased the dry dock of the Government at Newport, R. I., for extensions in its ship repair works.

L. D. Van Hessen, 2785 Sixth Avenue, Troy, N. Y., has plans for the construction of a two-story automobile service and repair building, 45 x 115 ft., at Fifth Avenue and 105th Street, estimated to cost $50,000.

The Water Committee of the Board of Trustees, South Orange, N. J., will receive bids until Oct. 19 for one motor-driven triplex pump, capacity 225 gal. per min., with control equipment, etc.; also for one steel standpipe, 25 ft. in diameter and 60 ft. high. Nicholas S. Hill, Jr., 112 East Nineteenth Street, New York, is consulting engineer.

A machine shop will be installed in the three-story automobile service building to be erected on West Broadway, Paterson, N. J., by J. E. Crandall, 119 Broadway, estimated to cost $165,000.

Manual training equipment will be installed in the new junior high school to be erected at Cherry Street and Westfield Avenue, Elizabeth, N. J., estimated to cost $200,000, for which bids will be received on a general contract until Oct. 24. Kilham, Hopkins & Greeley, 9 Park Street, Boston, are architects.

William A. Rodgers, borough clerk, Matawan, N. J., will receive bids until Oct. 16 for one steel water tank, with ca-

The Crane Market

The volume of new inquiry for both electric overhead and locomotive cranes continues small, but there is still a fairly large number of pending orders. Among recent inquiries still pending is a 5-ton hand power crane for the New York Central & Hudson River Railroad and two 125-ton, double trolley, overhead traveling cranes for the Public Service Electric Co., Newark, N. J. The report that the cranes for the New Jersey plant of the Western Electric Co. would be purchased from Chicago is incorrect. According to the engineers, the inquiry will probably be issued from New York.

The Hendrick Mfg. Co., Carbondale, Pa., is in the market for a 5-ton, 28 ft. span, 3-motor overhead crane with magnet.

Among recent purchases are:

International Paper Co., 100 East Forty-second Street, New York, two 15-ton electric traveling cranes from the Northern Engineering Works.

Dayton Power & Light Co., Dayton, Ohio, a 30-ton hand power crane from the Whiting Corporation.

Ford, Bacon & Davis, engineers, New York, a 20-ton hand power crane for the Pennsylvania Cement Co., Nazareth, Pa., from the Whiting Corporation.

Illinois Coal Corporation, Chicago, a 15-ton hand power crane from the Whiting Corporation.

Northern States Power Co., St. Paul, Minn., a 5-ton, 1-motor traveling crane with 1½-cu. yd. bucket from the Whiting Corporation.

Griffin Mfg. Co., Erie, Pa., two 1-ton, 3-motor, wheel-pitting trolleys from the Milwaukee Electric Crane & Mfg. Co.

United States Gypsum Co., a 2-ton, 3-motor monorail bucket hoist from the Milwaukee Electric Crane & Mfg. Co.

Chesapeake & Ohio Railroad Co., Richmond, Va., six 150-ton, self-propelling, steam wrecking cranes from the Industrial Works.

Gaybell Steel Construction Corporation, Binghamton, N. Y., a 15-ton, 45-ft. boom, 4-wheel, used Ohio locomotive crane from Philip T. King, New York.

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pacity of 150,000 gal., elevated on a steel tower, about 115 ft. high. William A. Goff, 922 Stokes Avenue, Collingswood, N. J., is engineer.

The Maccar Truck Co., Inc., Scranton, Pa., manufacturer of motor trucks, has leased a one-story building, 75 x 100 ft., at 342-46 Sixth Avenue, Newark, for a new factory branch for assembling and service work.

The Fiber Products Co., 240 North Tenth Street, Newark, manufacturer of radio horns, etc., has leased the plant at 30-38 Orange Street, Bloomfield, N. J., totaling 22,000 sq. ft. of floor space. The present business will be removed to the new location and tripled in capacity. Edward H. Felsberg is president.

Fire, Sept. 27, destroyed a portion of the plant of the Baker Castor Oil Co., Avenue A and Second Street, Bayonne, N. J., with loss estimated at $100,000, including hydraulic presses and other equipment. It is planned to rebuild.

The Public Service Electric Co., Public Service Terminal, Newark, has plans for an addition to its power plant at Point-No-Point, meadow district, estimated to cost $30,000 exclusive of equipment.

The Foley-Chevrolet Motor Sales Co., 957 Broad Street, Newark, local representative for the Chevrolet automobile, has leased property at 113-15 Washington Avenue, Belleville, N. J., for a new service and repair works.

A machine and repair shop will be installed in the one-story automobile building to be erected at Sussex Avenue and Summit Street, Newark, by the Yellow Cab Co., 11 Centre Street, to be 165 x 200 ft., estimated to cost $140,000, for which a general contract has been awarded. Edward V. Warren, Essex Building, is architect.

The Goodwin Antipilferage Automatic Lock Corporation, 233 Broadway, New York, recently organized with $50,000 capital stock, is preparing to have locking devices manufactured by contract. Address care of J. D. Jolkovski.

New England

BOSTON, Oct. 8.

WHILE business in September aggregated much better than many machine tool houses anticipated, October starts out with little indication of being a profitable month. A cotton goods manufacturer is still negotiating on a sizeable list of shop tools for a Southern subsidiary; a railroad, it is expected, will shortly appropriate several thousand dollers for a few machines, and two or three other industries have under consideration the purchase of metal-working equipment in limited amounts. Otherwise prospects are few, several heretofore classified as active having gone into the discard. Some idea of the unimportance of going business can be realized when it is taken into consideration that a new 10 gage squaring shear bought by a Worcester firm, a used vertical milling machine which went to a New Hampshire shop, and a used 51-in. boring mill and a 3½-ft. radial drill to a Wakefield concern, constitute the most important sales the past week.

Reports that the Saco-Lowell Shops, Boston, textile machinery, have received a large contract for equipment from Japan cannot be substantiated, but Providence machinery makers and fine tool manufacturers have emergency orders from that country. Japanese customers, it is reported, are requesting longer terms of credit.

Textile machinery makers generally are less active than a month ago. Heater manufacturers and stove makers are operating full, but comparatively little metal working equipment is required in this industry. The present status of the local machine-tool business is generally attributed to the growing uncertainty of business for the average machine shop, to the fact that those industries well employed are amply covered on equipment requirements, and the tendency among manufacturers to keep down inventories. Certain plants instead of buying machinery are reducing production costs by eliminating unskilled help. New England machine tool builders in general are fairly busy. Some are less so than two months ago, while others are more active, due to orders received from automobile manufacturers in the Middle West.

Small tools and machine parts are in excellent demand. One large dealer in such products reports September sales the heaviest, with one exception, in the history of the organization. Abrasives also are in good request. One of the largest Massachusetts makers of wheels says that while business is not on a war time peak basis, 1923 sales will average six times more than for the best year previous to the war.

The Stanley Insulating Co., Great Barrington, Mass., vacuum bottles, etc., has awarded contract for a one-story concrete and frame manufacturing unit on River and Pleasant Streets.

Bids closed last week for a contemplated machine shop to be erected by the Textile Finishing Machine Co., Summer Avenue, Providence, R. I. Lockwood, Greene & Co., Boston, are the engineers.

Negotiations are practically complete whereby the Eaton, Crane & Pike Co., Pittsfield, Mass., paper, will purchase the plant of the Pittsfield Machine Tool Co. on Mill Street. The property consists of approximately five acres on a railroad siding and one large and several small manufacturing units.

A vocational department will be included in the new $150,000 high school being erected by the city of Belfast, Me.

A vocational department will be included in the extensions to the high school building for the city of Central Falls, R. I., to be built at a cost of $112,000. William R. Walker & Son of Providence are the architects.

A. Lee Ellis, 10 High Street, Boston, has inquiries out for one turbo-generator, 500 kw., to operate at 150 lb. steam pressure, non-condensing.

The Automatic Cone Co., 83 Clark Street, Cambridge, Mass., is having plans drawn for a three-story and basement addition, 40 x 100 ft., to cost $30,000. Nathan Douglas, 393 Broadway, is architect.

Bird & Son, Inc., East Walpole, Mass., manufacturer of prepared roofing, etc., has awarded general contract to the Central Engineering & Construction Co., Pawtucket, R. I., for a one-story machine shop, 80 x 138 ft., estimated to cost $40,000.

The Hyde Machine Co., 13 Hope Avenue, Worcester, Mass., will commence the erection of a two-story addition, 75 x 100 ft., estimated to cost $45,000.

The Connecticut Light & Power Co., Meriden, Conn., has acquired property at South Meriden for the construction of a new power house.

New interests have acquired the plant of the Aetna Nut Co., High Street, Southington, Conn., and will remodel for the production of iron and other metal castings. The name

of the purchasing company is temporarily withheld. James H. Pratt is president of the Aetna company.

Manual training equipment will be installed in the new East Side junior high school to be erected at Meriden, Conn., estimated to cost $200,000, for which Walter T. Arnold, Meriden, is architect.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Oct. 23, for nine motors, spare parts and control appliances for the Portsmouth, N. H., Navy yard, schedule 1397.

The Boston Gear Works, Haywood Street, Wollaston, Mass., is planning for the early installation of equipment in a two-story addition, 85 x 100 ft., to cost about $50,000, for which a general contract recently was awarded to the Canter Construction Co., 6 Beacon Street, Boston.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Oct. 30 for the following machine tools for installation at the Boston Navy Yard: 12 lathes, schedule 1403; pipe bending machine, schedule 1404; boring mill, schedule 1406; drill press and other tools, schedule 1407; also for one blower, cupola, furnace and oven, schedule 1405.

A one-story and basement power house, 30 x 65 ft., will be erected at the new Cary Hospital, Caribou, Me. H. W. Rhodes, 574-A Congress Street, Portland, Me., is architect.

A manual training shop unit, with foundry, machine shop, woodworking shop and other departments will be constructed in connection with the new Warren Harding high school at Central and Boston Avenues, Bridgeport, Conn., to cost $500,000, for which bids will be received on a general contract until Oct. 16. Caldwell, Walker & Beckwith, 886 Main Street, are architects.

Work has commenced on extensions to Building No. 8 at the plant of the Moore Drop Forge Co., Chicopee, Mass., estimated to cost $35,000, including equipment. McClintock & Craig, 33 Lyman Street, Springfield, Mass., are architects.

Philadelphia

PHILADELPHIA, Oct. 8.

BIDS will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Oct. 23 for 42 forced-draft blowers and 42 fuel oil burners for the Philadelphia Navy Yard, schedule 1402; also for armature machines and auxiliary equipment for the Philadelphia and Boston Navy Yards, schedule 1401; and for 7000 steel shackles for the Philadelphia yard, schedule 1392.

The Locomobile Co. of America, Bridgeport, Conn., will establish a factory branch, with service and repair departments, at 1411 Spring Garden Street, Philadelphia. Fred C. Ditmars will be in charge.

The Olney Foundry Co., 180 West Duncannon Street, Philadelphia, has awarded a contract to the Northern Construction Co., Inc., 515 Fisher Street, for the erection of an addition to cost $57,000.

The R. W. Hartnett Co., 1010 Race Street, Philadelphia, manufacturer of printing equipment and supplies, has awarded a general contract to Gill & Co., Otis Building, for a three-story and basement plant, 50 x 95 ft., to cost approximately $60,000.

The Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, has purchased 56 acres at the foot of Erie Avenue and the Delaware River as a site for a new generating plant, estimated to cost $6,000,000 with machinery. Work will commence early in 1924. Plans are also projected for the erection of a large power distributing station in the northeastern section of the city. The company will furnish power to the West Jersey & Seashore Railroad from its plant on Somerset Street, and will install lines and equipment for this purpose. The railroad purposes to discontinue the operation of its electric generating station at Westville, N. J.

The Industrial Bureau, Philadelphia Commercial Museum, Thirty-fourth Street, has received an inquiry from a company at Port au Prince, Haiti, in the market for machinery for a match manufacturing plant. Also, from a company at Shanghai, China, desiring to get in touch with American manufacturers of toy and amateur motion picture machines.

The Supply Officer, United States Navy Yard, Philadelphia, will take bids at once for one motor and spare parts, N. S. A. requisition 361⅛; also for 150 boiler tubes, Y. and D. requisition 35.

The Godfrey Roller Co., 1219 Race Street, Philadelphia, manufacturer of printing plant equipment, is considering the construction of a new plant, four or five stories, at 211-15 North Camac Street.

C. W. Rudisill, Philadelphia, care of the Nelson-Pedley Construction Co., 1615 Spruce Street, will erect a two-story automobile service and repair building, 130 x 155 ft., with machine shop, at Fifty-fifth and Sansom Streets, estimated to cost $200,000, with equipment.

The Philadelphia & Reading Railroad Co., Reading Terminal, Philadelphia, has plans for the construction of a general yard service and repair building at Camden, N. J. Samuel T. Wagoner is company architect.

L. Shutte, 650 East Marion Street, Lancaster, Pa., is planning for the erection of a one-story foundry, 42 x 90 ft., to cost $20,000.

Fire Oct. 4 destroyed a portion of the fertilizer manufacturing plant of Jacob Trinley & Son, Linfield, near Pottstown, Pa., with loss estimated at $50,000 including machinery. It is planned to rebuild.

The Liberty Can & Sign Co., North Water, near Chestnut Street, Lancaster, Pa., has acquired property on North Plum Street and the Pennsylvania Railroad and plans the erection of a new four-story factory to cost $75,000.

Leroy E. Yagel, Hartleton, Pa., is organizing a company to build and operate an electric power plant and system, for service in Hartleton and Hartley townships.

The Pennsylvania Railroad Co., Broad Street Station, Philadelphia, is said to be planning for the complete electrification of its classification yards and service buildings at Enola, Pa.

The Central Railroad of New Jersey, 143 Liberty Street, New York, is negotiating for the purchase of property in the Westside district, Bethlehem, Pa., for the construction of a new engine house and repair shops.

The Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., has acquired about 5 acres adjoining its plant, heretofore held by the Steelton & Harrisburg Brick Co., to be used for future expansion.

The Berwick Lumber & Supply Co., Berwick, Pa., is planning to rebuild the portion of its planing mill and plant recently destroyed by fire with loss estimated at $100,000, including machinery. More than 40 machines and tools were destroyed.

Paul Beilich, Dupont, Pa., has acquired property at 65 South Front Street, Coplay, Pa., for the operation of a plant to manufacture concrete products.

The Bally Mfg. Co., Bally, Pa., manufacturer of cedar chests and other wood products, is planning to rebuild the portion of its plant destroyed by fire Oct. 3, with loss of $100,000, of which about $25,000 is represented by machinery. George W. Melcher is president.

Interests represented by John E. Snyder, attorney, Harrisburg, Pa., are organizing the Manada Electric Co., to install and operate a power plant and system in a portion of South Hanover township.

The Frick Co., Waynesboro, Pa., is inquiring for a used horizontal punch with 12-in. throad; also a used vertical punch with 60-in. throat.

M. J. Margulies, 312 Liberty Building Philadelphia, is inquiring for rounds, squares, and hexagons, 1 in. to 2 in., 3 ft. and over in length and not over .025 per cent carbon free of alloys.

Pittsburgh

PITTSBURGH, Oct. 8.

ALTHOUGH machine tool business in this district still is of moderate proportions and confined for the most part to single tools representing necessary replacements, the trade is encouraged by reports that orders for the 34 tools for the Pennsylvania Railroad, inquired for several weeks ago, will be distributed this week. The regular quarterly list of the Westinghouse Electric & Mfg. Co. has been issued and contains about 60 tools. The most interesting development in heavy equipment is the placing by the Carnegie Steel Co. of an order for a 46-in. x 66-in. blast furnace gas engine for its Youngstown works, with the Mesta Machine Co. The engine will drive a 4000 kw. 6600 volts, three phase, 25-cycle electric generator, order for which has been awarded the General Electric Co.

Baker Motors, Inc., 821 Commerce Building, Erie, Pa., has been incorporated with a capital stock of $500,000 to manufacture power units and equipment. Baker steam power units are now being manufactured at the factory, 1709 Liberty Street, but the company will also consider placing some manufacturing contracts. The motors are used for driving automobiles, cranes, hoists, craft and for general shop work. G. A. Frantz is president.

A one-story machine shop will be erected by the Independent Brewing Co., South Twenty-second Street, Pittsburgh, for which plans have been drawn.

The Penn-American Refining Co., Oil City, Pa., will make extensions in its plant to cost $200,000 with machinery, to include an electric power plant, steam boiler plant, coal tipple, gasoline refinery and new stills for main refinery.

The Monongahela-West Penn Public Service Co., West Penn Building, Pittsburgh, has arranged for a new bond issue of $1,500,000, a portion of the proceeds to be used for extensions in its plants and system in the vicinity of Morgantown and Grafton, W. Va. A. M. Lynn is president.

The Continental Coal Co., Fairmont, W. Va., recently formed with a capital of $700,000, is planning for the installation of electric power and mining machinery at its properties in Monongalia County. Howard M. Showalter is president.

Bids will be received by the Superintendent of Buildings, Board of Education, 1326 Fulton Building, Pittsburgh, until Oct. 18, for boilers, fans, motors, air washers, stokers and auxiliary equipment for the new South Hills high school. Alden & Harlow, 2403 Farmers' Bank Building, are architects.

The Emmons-Hawkins Hardware Co., 1028 Third Avenue, Huntington, W. Va., is planning the erection of a new six-story distributing plant, 200 x 210 ft., to cost $100,000.

The City Council, Keyser, W. Va., is planning the installation of electrically-operated centrifugal pumping machinery in connection with extensions in the municipal waterworks. Steel tanks and water towers will also be installed. J. N. Chester, Union Building, Pittsburgh, is engineer.

The Penn Public Service Co., Vine Street, Johnstown, Pa., has awarded a general contract to the Wilson Construction Co., Johnstown Trust Building, for a two-story automobile service and repair building, 55 x 110 ft., estimated to cost $75,000.

The Raine Lumber Co., Marlinton, W. Va., has acquired the property of A. D. Neill at Clover Lick, Pocahontas County, comprising lumber plant, railroad and 5000 acres of timber, for $250,000. Plans are under consideration for the installation of additional equipment, including electric power and sawmill machinery. Joseph Raine is in charge.

W. J. Early & Sons, Ltd., 812 Sarah Street, Pittsburgh, has filed plans for a one-story addition to its foundry, estimated to cost $60,000. It specializes in the manufacture of iron and steel castings.

The plant and property of the Sharon Pressed Steel Co., Sharon, Pa., will be offered for sale on Oct. 23. It is now in receivership.

The National Mining Co., Monongahela, Pa., has plans under way for a new tipple at its Ginger Hill mine, with connecting runway, to cost $500,000 including machinery. Work will commence early next year.

Manual training equipment will be installed in the new high school to be erected at Washington, Pa., estimated to cost $125,000, for which bids will be received on a general contract until Oct. 15. G. H. Schwan, Peoples Bank Building, Pittsburgh, is architect.

The Winsted Coal Co., Uniontown, Pa., has tentative plans for the installation of electric power and mining machinery at its properties along the Monongahela River.

Buffalo

BUFFALO, Oct. 8.

PLANS are being arranged by the Brace Mfg. Co., Mayville, N. Y., for the establishment of a new plant to manufacture mechanical control devices.

Excavations are being made for the erection of a two-story service and repair building, 77 x 92 ft., for the Buick Motor Corporation, 1100 Main Street, Buffalo, estimated to cost $75,000.

The Perry Electric Light Co., Perry, N. Y., will build an addition to its generating plant and install additional equipment. Extensions will also be made in the transmission system.

The Batavia Iron Works, Inc., Batavia, N. Y., recently organized to take over the plant of the Batavia Car Works, Inc., will operate a department for locomotive repair work. The company will be affiliated with the Ferguson-Allen Co., Buffalo, operating a similar plant.

Manual training equipment will be installed in the high school addition to be erected at Dunkirk, N. Y., estimated to cost $500,000. The Board of Education is in charge.

A one-story power plant, with steam-operated electrical equipment, will be built by the Perry Knitting Co., Perry, N. Y.

J. A. Cramer, 171 North Pearl Street, Buffalo, will build a one-story addition to his automobile service and repair building, estimated to cost $72,000 including equipment.

Electric power equipment, conveying and other machinery will be installed in the new one and two-story plant, 340 x 400 ft., to be erected by the American Lithographing Co., 571 Amherst Street, Buffalo, estimated to cost $225,000, for which a general contract has been awarded to Harding & Crea, White Building.

Frank A. Reppenhagen, Buffalo, is planning the erection of a one-story works, 50 x 85 ft., at 339 Oak Street, to manufacture printing press rollers, etc.

Michael Williams, 405 Amherst Street, Buffalo, is planning for the establishment of a factory for automobile and wagon parts manufacture and repair.

The United States Pulp Products Co., Inc., Newark, N. Y., is planning the construction of a new plant to replace its works recently destroyed by fire.

The J. Gleason Co., 1095 Sycamore Street, Buffalo, is planning for the installation of sheet-metal working machinery.

The Kant-Kool Electric Water Heater Co., Inc., 22 North Water Street, Ogdensburg, N. Y., has been organized with capital stock of $100,000 to manufacture electric water heaters and kindred products. Factory buildings have been secured and the company will soon be in the market for equipment. M. Katzman heads the company.

The Premier Mill Corporation, Geneva, N. Y., has been organized with $200,000 capital stock to manufacture mechanical products and is planning the installation of equipment. The company will specialize in the manufacture of grinding apparatus. S. K. Nestor is one of the heads.

The Chemical Toilet Corporation, Liverpool Road, Syracuse, N. Y., is in the market for a used power riveter, capacity ¼ in.

R. Harris, 642 Clinton Street, Buffalo, is inquiring for new 3-in. steel tubing, 11 to 14 gage.

Detroit

DETROIT, Oct. 8.

H. E. BRISTOL, Battle Creek, Mich., formerly connected with the Buchanan Pattern Works, Buchanan, Mich., has acquired property at 14 State Street, E., for the establishment of a new shop to manufacture metal and wood patterns.

The Department of Purchases and Supplies, Detroit, 700 Marquette Building, is planning to purchase a grinding machine for the municipal street railroad.

The Columbia Motor Co., 6501 Mack Avenue, Detroit, manufacturer of automobiles, has tentative plans for a one-story addition to its works on Charlevoix Avenue, to cost approximately $100,000, with equipment.

A one-story power house to cost about $25,000 will be erected at the new three-story school to be built on Cameron Street, Detroit, to cost $570,000. Malcolmson, Higginbotham & Palmer, Industrial Building, are architects.

The Consumers Power Co., Jackson, Mich., has preliminary plans for a hydroelectric power plant on the Manistee River, near Jackson to cost $250,000 with transmission system. The Fargo Engineering Co., Citizen-Patriot Building, is engineer.

The Federal Drop Forge Co., South Washington Street, Lansing, Mich., will commence the erection of a one-story addition, 50 x 60 ft., for a heat treating department.

The G. U. Body Co., Lansing, Mich., has been organized as a subsidiary of the Godfrey-Urquhart Body Co., manufacturer of automobile bodies, and will take over the repair department of the parent company. It will also install a department for the production of special bodies.

The Republic Creosoting Co., Hammond Building, Detroit, has contracted with the Columbia Steel Corporation, San Francisco, for the entire output of the coal tar by-product from its new coke ovens in Utah County, Utah, for a period of years and plans the establishment of a new works in the vicinity of the steel plant to cost $100,000 with equipment.

The Atlas Forge Co., Lansing, Mich., has work under way on extensions and the installation of additional equipment, including boilers.

The Valley Paper Co., Kalamazoo, Mich., recently organized, has plans for the erection of a new mill, with power house, machine shop and other buildings, to cost $800,000 with machinery. It will specialize in the manufacture of fine book ppapers. George O. Comfort, formerly head of the Monarch Paper Co., is president; Edwin H. Hacking, secretary and treasurer. Billingham & Cobb, Press Building, are architects and engineers.

The National Spring & Wire Co., Albion, Mich., has work in progress on a new plant for the manufacture of spring seats for automobiles.

Baltimore

BALTIMORE, Oct. 8.

THE plant of the Maryland Bolt & Forge Co., Falls Road and Smith Avenue, Mt. Washington, Baltimore, which for more than a year has been partly operated by a creditors' committee, will resume operations on a large scale as the Maryland Bolt & Nut Co. S. Forry Laucks, president York Safe & Lock Co., is president of the new company, and Linus Keating, president Harrison Bolt & Nut Co., Harrison, N. J., is vice-president and treasurer. Additional machinery is being installed and when the plant is in full operation it will employ about 100.

The Anthracite Fuel Corporation, with temporary offices at 706 Continental Building, Baltimore, is planning to erect a building to manufacture briquettes. The first unit will have an annual capacity of 60,000 tons. F. A. Weymouth is president.

The Besto-lite Mfg. Co., Baltimore, has established a plant at Biddle Street and Park Avenue, for the manufacture of automobile parking lights and to do plating work. W. Bernard Duke is president and C. Hall is manager.

The Baltimore & Ohio Railroad will install 3000 hp. in motors at its property at the foot of Andrae Street, Baltimore.

Inquiries are being made by the Roberts Coal Mining Co., Inc., 213 St. Paul Street, Baltimore, for electric power, hoisting and other equipment for installation at its properties.

The Maryland Steel Rolling Co., Baltimore, will commence extensions at its plant at 599 Ingraham Avenue, Trenton, N. J., to include the installation of box strap annealing furnaces, variable speed motor-driven mills, automatic power reels and auxiliary machinery. It is purposed to develop a large capacity in the cold rolled stamping steel department.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Oct. 30, for 1000 mine trucks for the navy mine depot at Yorktown, Va., schedule 1388.

The Common Council, Inman, S. C., plans the installation of electrically operated pumping machinery in connection with waterworks extensions, to cost about $50,000.

A power plant will be constructed by the Queen Anne Textile Co., Burlington, N. C., at its proposed cotton mill estimated to cost $1,000,000. J. M. Cook is vice-president.

Downie & Co., Inc., Portsmouth, Va., manufacturer of agricultural equipment, plans the installation of additional equipment, including lathes, drill press and other tools. C. E. Downie is head.

The Columbia Railway & Navigation Co., Columbia, S. C., has preliminary plans for the initial unit of a new hydro-electric power plant on the Cooper River, with capacity of about 40,000 hp., estimated to cost $1,000,000 with equipment and transmission line.

The Georgia Kaolin Co., Gordon, Ga., recently organized by officials of the Savannah Kaolin Co., Savannah, Ga., has acquired the local properties of the Columbia Kaolin & Aluminum Co., and will provide machinery for an output of close to 100 tons of washed clay per day. It will operate with a capital of $145,000.

The General Purchasing Officer, Panama Canal, Washington, will receive bids until Oct. 27 for electric wire, high tension insulators and fittings, steering engine, eye and ring bolts, cable clips, valves and miscellaneous equipment, circular 1564.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for one 500 kw. turbo-generator, three-phase, 60 cycle, 440 volts, condensing, to operate at 200 lb. pressure; also, for two 300-hp. water-tube boilers, to operate at 200 lb. pressure, with automatic stokers and super-heater; and for one 1000-hp. open feed-water heater, Cochrane or Webster type, second-hand, in good condition.

The Enterprise Lumber Co., Mount Olive, N. C., is planning to rebuild the portion of its plant destroyed by fire, Sept. 27, with loss estimated at $100,000 including machinery.

The Union Electrical Co., Baltimore, has leased the three-story building at Charles Street and Lafayette Avenue, for the establishment of a new plant.

Electric power, conveying and other equipment, ovens, etc., will be installed in the new five-story plant to be erected by the Planters Nut & Chocolate Co., Suffolk, Va., 80 x 150 ft., estimated to cost $230,000 with machinery.

A one-story power house, 80 x 120 ft., will be constructed by the Wall Street Tobacco Co., 79 Wall Street, New York, at its proposed plant at Ahoskie, N. C., estimated to cost $350,000 with machinery, for which plans are being prepared.

The Poole Engineering & Machine Co., Woodberry, Baltimore, has authorized plans for remodeling the plant of the Maryland Metal Products Co., Hagerstown, Md., recently purchased for the production of pressed steel products. Additional machinery will be installed. Oscar Eurich, formerly connected with the Maryland company, has been appointed general superintendent of the plant under the new ownership. S. Proctor Brady is president.

Bids will be received by the Board of Aldermen, Andrews, N. C., until Oct. 24, for a municipal hydroelectric power plant on the Hiwassee River, for an initial capacity of 1250 kw., including power dam, 40 ft. high and 390 ft. long, and transmission line, 11 miles. The Ludlow Engineers, Winston-Salem, N. C., is engineer.

The Common Council, Westminster, S. C., plans the installation of electrically-operated pumping machinery in connection with a new municipal waterworks, estimated to cost $150,000.

The Industrial Machinery Division, Room 815, Bureau of Foreign and Domestic Commerce, Washington, will receive catalogs and price lists of refrigerating plant machinery for reforwarding to Riga, Latvia, for transmission to the office of the American trade commissioner, Riga, Latvia.

Bids will be received by the Board of Water Commissioners, Macon, Ga., until Oct. 16, for one steam-driven centrifugal pumping engine, with capacity of 7000 gal. per min., single stage, with condensing equipment and auxiliary apparatus, for installation at the municipal waterworks.

The Taylor-Parker Co., Commerce Place and Water Street, Norfolk, Va., has inquiries out for one 100 hp. engine, and three 100 hp. boilers, with stacks and auxiliary power equipment.

The Harley Hardware Co., Valdosta, Ga., has inquiries out for an engine and auxiliary equipment, about 70 hp.

Cleveland

CLEVELAND, Oct. 8.

INQUIRY for machine tools increased somewhat during the week and October promises to show a gain over September in the volume of business. The Rickenbacker Motor Co., Detroit, purchased about 20 turret lathes, 15 of which were placed with a Cleveland manufacturer. Used machines made up the remainder of the purchase. A fair volume of business continues to come from other Detroit automobile manufacturers but buying is in small lots. It is understood that the Maxwell Motor Sales Corporation will purchase considerable equipment to be installed in an Indiana plant. The Nickel Plate Railroad, which came into the market a few months ago for about 15 machines, placed the bulk of this business during the week with several local machinery houses.

The Packard Electric Co., Warren, Ohio, has started the erection of a two-story transformer plant, 110 x 220 ft., which will involve the expenditure of $350,000. The present works will be used exclusively for the manufacture of automobile cable. With the new building the company will largely increase its transformer capacity and will manufacture transformers in capacities up to 7500 kva.

The Phillips Custom Body Corporation, Warren, Ohio, which has purchased the former plant of the National Lamp Co., Warren, will equip it for the manufacture of custom built automobile bodies. The company has been incorporated with a capital stock of $375,000. Frank Phillips, president, was formerly the head of the J. B. Judkins Co., Maranac, Mass. The Phillips company has acquired the plant for the Artcraft Top Co., Cleveland, which will be operated as a separate unit.

The Toledo Chevrolet Co., Toledo, which has about completed a large extension, is preparing for further additions and will erect another building, 150 x 250 ft.

The Norwalk Enamel Products Co., Norwalk, Ohio, has acquired a site on which it plans to erect a new factory shortly.

The William Campbell Co., which recently decided to move from Detroit to Alliance, Ohio, has placed contract for the erection of a plant which is expected to be ready for operation about the first of the year.

The Wellston Mfg. Co., Wellston, Ohio, is in the market for a 5-ton electric hoist, 220 volts, a.c., 60 cycle, 2 phase.

The Eaton Axle & Spring Co., Central Avenue and East Sixty-fifth Street, Cleveland, has plans for an addition to

cost about $90,000, including equipment. C. S. Rider & Co., Century Building, are architects.

Manual training equipment will be installed in the new two-story Lincoln junior high school to be erected on Sixth Street, Canton, Ohio, estimated to cost $500,000, for which bids are being taken on a general contract until Oct. 15. George F. Hammond, 130 Tuscarawas Street, is architect.

The National Ice Co., Mansfield, Ohio, is asking bids on a general contract for a new plant, 42 x 60 ft., estimated to cost $50,000, with machinery. A. C. Bishop, Guardian Building, Cleveland, is architect.

Chicago

CHICAGO, Oct. 8.

BUYING remains slow, but there are increasing evidences of a revival of interest in the market. Considerable prospective business is in the formative stage, but has not yet resulted in the issuance of actual inquiries. A railroad supply company which recently built a plant addition in Chicago, is now surveying its equipment requirements, and a tractor manufacturer contemplates the purchase of special purpose machinery. The extensive Burlington list has not yet been acted upon, but is expected to be closed in the near future. So far as can be ascertained, no other railroads will buy in a large way at this time.

The Chicago, Indianapolis & Louisville has put out inquiries for a 300 cu. ft. air compressor, a double head bolt cutter to cut 1½ to 2-in. bolts, a 3-ft. radial drill, a 5-ft. radial drill, and a motor-driven wet and dry grinder. The Rock Island has placed orders for a 36-in. shaper and a 5-ft. radial drill. The Illinois Central has put out inquiries for a 54-in. heavy duty motor-driven wheel lathe for Waterloo, Iowa, and a 1½ to 6-in. motor-driven tube cutting machine for Vicksburg, Miss.

Although the Buick Motor Co. is reported to be buying extensively at Detroit, automotive companies in this district are not particularly active. The most recent purchase by the Nash Motors Co. was a cylinder lapping machine. The Public Service Co. of Northern Illinois which has been in the market for machine tool equipment for its new Waukegan, Ill., power plant, has purchased a 14-in. x 14-ft., and a 24-in. x 16-ft. geared head motor drive engine lathe. Other tools which were included on the same inquiry follow: A 3-in. horizontal boring mill, 26-in. band saw, 12-in. two-wheel floor grinder, drill grinder, hack saw, 4-ft. radial drill, and a 24-in. shaper. All of the machines were to be motor driven. The National Lock Co., Rockford, Ill., is inquiring for an abrasive grinder.

The Whiting Corporation, Harvey, Ill., has taken the following orders for foundry equipment: A 5-ton cupola for the Brooklyn Foundry Co., Astoria, N. Y.; three 10-ton cupolas for the Landis Machine Co., Waynesboro, Pa.; 9500-lb. steel ladle for the Maynard Steel Castings Co., Milwaukee, a 30 x 60-in. tumbling barrel for the Reliance Foundry Co., Schlesingerville, Wis., and 5-ton cupolas for David E. Allen, foundry, Yonkers, N. Y., and the Allen Foundry Co., Adams, Mass.

The Hurley Machine Co., Chicago, is inquiring for a 36-in. x 36-in. x 8-ft. motor-driven planer.

The Colozona Mines Co., has been incorporated in Arizona and will erect a 125-ton concentrating mill. In addition to gold it will produce a high grade concentrate of vanadium and molybdenum for use in making steel, aluminum and copper alloys. The company is in the market for one 125 and one 150-hp. oil burning engine, rod crushing mill, large jaw crusher, electric motors, hoisting cable, 500-ft. compressor and other used mining equipment in good condition. A. B. Frenzel, 1540 Sherman Street, Denver, is consulting engineer.

Contracts have been awarded for a two-story plant, 100 x 200-ft., for the manufacture of commercial automobile trucks, at 3830-38 South Michigan Avenue, Chicago, to be occupied by the American La France Fire Engine Co., Elmira, N. Y. It will cost $70,000.

The Blue Valley Creamery Co., 700 South Clinton Street, Chicago, is taking bids through S. Scott Joy, 2001 West Roosevelt Road, on a three-story factory, 81 x 119-ft., 1137-43 West Jackson Boulevard, to cost $160,000.

The Armstrong Machine Co., Three Rivers, Mich., is erecting a shop addition to be used for the construction of steam traps.

The foundry of the Free Sewing Machine Co., Rockford, Ill., was recently damaged by fire. It was a one-story frame structure, 100 x 300-ft.

The Ross-Carrier Co., Benton Harbor, Mich., will build a one-story addition to cost $10,000. The company manufactures lumber carrying machines and the addition will increase its capacity approximately 50 per cent.

The Benton Harbor Malleable Foundry Co., Benton Harbor, Mich., will erect a steel building at a cost of $20,000, to take the place of a wooden structure which was built when the plant was started some 15 years age.

The Blackhawk Machine & Foundry Co., Davenport, Iowa, will build a one-story foundry addition, 42 x 75 ft., to cost $3,500.

The International Lamp Corporation, 736 West Monroe Street, Chicago, has purchased the Vitanola plant in Cicero, Ill., and will occupy it for the manufacture of lamps and furniture. The building has 225,000 sq. ft. of floor space and is located on the southwest corner of South Fifty-second Avenue and West Nineteenth Street.

The Studebaker Sales Co., 427 Franklin Avenue, Minneapolis, Minn., local representative for the Studebaker automobile, will install a machine shop in its proposed three-story service building, estimated to cost $100,000. Samuel J. Beck is vice-president and manager.

The Lennox Furnace Co., Marshalltown, Iowa, is considering the erection of a one and two-story addition, 70 x 145 ft., to cost about $25,000.

The Illinois Coal Corporation, Old Colony Building, Chicago, is contemplating the construction of a power plant, 60 x 65 ft., at Mason, Ill. Other buildings, including a mechanical shop, 60 x 140 ft., and hoisting engine house, will also be built. The work will cost about $150,000.

Bids will be received by the Quartermaster Department, Intermediate Depot, United States Army, 1819 West Pershing Road, Chicago, until Oct. 16, for 1200 jig saw blades; large quantities of carriage bolts, machine bolts and stove bolts; brass wire cloth; wire nails; circular wheels; lead-burning outfits, etc., circular 24-30.

Manual training equipment will be installed in the two-story and basement high school to be erected at Proctor, Minn., estimated to cost $95,000, for which plans are being prepared by E. F. Broomhall, 710 Alworth Building, Duluth, Minn., architect.

The Common Council, Albia, Iowa, plans the installation of electrically-operated pumping machinery in connection with extensions in the municipal waterworks to cost $80,000. Brown & Cook, Ottumwa, Iowa, are engineers.

The Bortner Mfg. Co., Chicago, manufacturer of plumbing equipment, fittings, etc., has leased a building at Lakeside Avenue and Stanley Street, Waukegan, Ill., for a new plant.

The Continental Gas & Electric Corporation, Lincoln, Neb., is disposing of a bond issue of $1,000,000, a portion of the proceeds to be used for extensions in generating plants and system.

James B. Clow & Sons, 544 South Franklin Street, Chicago, manufacturers of heating, waterworks and plumbing equipment and supplies, have acquired the plant on Talman Avenue, herefofore held by the Sullivan Machinery Co., for $375,000. The property consists of several buildings, one to six stories, and will be remodeled for new works.

Cincinnati

CINCINNATI, Oct. 8.

AFTER a quiet trade in September, machine tool manufacturers report considerably more activity the first week of October, and sentiment in regard to the future is much more hopeful. Inquiry is improving and more orders are being placed, but generally for only one and two machines. However, the number closed the past week indicates a need of tools in many plants, which will probably develop into a healthy buying movement during the next two months. Automobile manufacturers continue to place orders for replacement and are expected to buy further in preparation for next year's operations.

Railroads have been fair buyers. The Missouri, Kansas & Texas has placed orders for a number of machines, and the Pennsylvania has also been in the market in a small way, buying several drilling machines. Action has not been taken on its lathe inquiry, however. The Burlington is reported to have placed some orders at Chicago, but the bulk of its list, including engine lathes, has not

been closed. The Willys-Morrow Co., Elmira, N. Y., is reported to be purchasing steadily.

An inquiry from Japan for 100 engine lathes, including 25 12 to 14-in., 30 24-in., 30 32-in., 10 48-in., and 5 60-in. has been received by a local manufacturer. This is considered a bona-fide inquiry, and prospects are good for placing the order in a short time.

The Kelly-Roth Wagon Co., Cincinnati, has purchased the former plant of the Ferro-Concrete Construction Co., Richmond and Harriet Streets, and will move from its present location on Depot Street. The company, which manufactures truck bodies, will greatly increase its output by the acquisition and considerable additional equipment will be installed. J. J. Kelly is president,

The Randle Radio Co., Cincinnati, has been incorporated with a capitalization of $100,000 to manufacture radio apparatus, specializing on an inside loop that does away with outside aerials. W. E. Randle, Jr., of the Randle Machinery Co., at which plant the new company will carry on its manufacturing operations, heads the company.

The Lion Mfg. Co., Fifth and Heaton Streets, Hamilton, Ohio, has been incorporated with a capitalization of $20,000 to manufacture special machinery, tools, dies, jigs and fixtures. Albert Hossfeld is president.

The Central Brass & Fixture Co., Springfield, Ohio, is building a two-story addition, 50 x 150 ft.

The United States Engineers' Office, Louisville, Ky., will take bids until Oct. 22, on six steel derricks. Plans and specifications are on file at that office.

Indiana

INDIANAPOLIS, Oct. 8.

BIDS will be received by the Board of Public Works, South Bend, Ind., until Oct. 16 (extended from Sept. 19), for equipment for waterworks extensions and improvements, including two Corliss pumping engines and auxiliaries, each with capacity of 5,000,000 gal. per day; two 100 hp. watertube boilers, to operate at 200 lb. working pressure, with superheaters and auxiliaries; coal and ash-handling and storage equipment. John W. Toyne, South Bend, is engineer; the Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is consulting engineer.

The Hutchison Auto Co., 963 North Meridian Street, Indianapolis, plans to rebuild the portion of its service building and two-story repair shop destroyed by fire Oct. 1, with loss approximating $50,000. Andrew Hutchison is president.

The Ries Furniture Co., 306 South Michigan Avenue, South Bend, Ind., will commence the erection of a new three-story plant at Lafayette and Monroe Streets, to cost approximately $100,000 with machinery. Freyermuth & Maurer, Farmers Trust Building, are architects.

The Elam Paper Co., Marion, Ind., is being reorganized with a capital of $1,100,000, for general expansion. Plans are being perfected for the establishment of a plant at Dayton, Ohio, and the removal of the Marion works to this location.

The Interstate Public Service Co., Indianapolis, will install a plant and system at Winamac, Ind., for local service, where the operation of a municipal electric plant is being discontinued. Electrically-operated pumping machinery will be installed at the municipal waterworks, replacing present steam-driven equipment..

The Bastian-Morley Co., La Porte, Ind., manufacturer of heaters, boilers, etc., will commence the erection of a one-story addition, 54 x 200 ft., estimated to cost $75,000, including equipment.

The New York, Chicago & St. Louis Railroad, Cleveland, has acquired 200 acres at Fort Wayne, Ind., for a new classification yard and freight terminal. A portion of the property will be used for an engine house and locomotive repair shop.

Manual training equipment will be installed in the two-story and basement junior high school to be erected at Ewing and Fellows Street, South Bend, Ind., estimated to cost $600,000, for which bids will soon be asked on a general contract. Austin & Shambleau, 111 North Lafayette Street, are architects.

The Standard Electric Stove Co., Toledo, Ohio, will remove its business to Goshen, Ind., where a portion of the plant of the Engman-Matthews Range Co., has been leased. The capacity will be increased.

The Meridian Sheet Metal & Repair Co., Indianapolis, has removed to its new building at 1331-33 North Capital Avenue, where the capacity will be increased. Frank N. Scanlon is general manager.

Milwaukee

MILWAUKEE, Oct. 8.

THE quiet tool market of recent months is gradually becoming more active with the appearance of increased orders. Industries apparently view the future with a greater degree of certainty, for it is noted that in the past few weeks more extensions of shops are projected than since last spring. This condition always is accompanied by a better demand for machine tools, and inquiry is more active. Much of this, however, is being put out for the purpose of estimating costs and is largely confidential.

The city of Milwaukee contemplates the construction of a central machine shop and service station at Sixteenth and Canal Streets at an estimated cost of $100,000 to $150,000 for servicing all municipal automotive equipment. Tentative plans are being drawn by J. P. Schwada, city engineer. Works probably will not start until Jan. 1 and equipment purchases consequently will not be made until next spring. Roland E. Stoelting is commissioner of public works.

The J. W. Hewitt Machine Co., 131 North Commercial Street, Neenah, Wis., specializing in paper mill machinery, has placed contracts with the C. R. Meyer & Sons Co., Oshkosh, Wis., for a $25,000 addition to be completed by Jan. 1. Considerable new equipment will be required but details are not yet available.

The Dells Paper & Pulp Co., Eau Claire, Wis., which is starting work on a $400,000 pulp and paper mill improvement and enlargement program, has placed an order for four large pulp grinding units with the Green Bay Barker Co., Green Bay, Wis. L. A. DeGuere, Wisconsin Rapids, Wis., is consulting engineer and in charge of purchases.

Members of Williams, Cole & Wolff, Inc., manufacturers' agent, 610 Sycamore Street, Milwaukee, have organized two new Wisconsin corporations which will engage in the manufacture and sale of high speed steel and tools. The Jolite Co., Inc., with 1000 no-par shares, has been organized to produce the steel, and the Jolite Tool Co., capitalized at $10,000 preferred and 1000 no-par shares, will design and produce tools from the metal. Dean R. Williams, Cyrus L. Cole, George M. Wolff, Winfield S. Nussbaum and John Last are the principals.

The Village Board, New Holstein, Wis., will close bids Dec. 18 for the complete construction and equipment of a municipal water works and sewerage plant estimated to cost $175,000 and being designed by Jerry Donohue, consulting engineer, Sheboygan, Wis. The water system will require 30,000 lin. ft. of 4, 6 and 8-in. cast iron pipe, 41 hydrants, and a 60,000-gal. elevated steel tank on a 100-ft. steel tower. Bids on the engine, pumps, boilers, etc., will not be taken until the artesian well has been drilled and actual requirements ascertained. Louis Hipke is village clerk.

The Luick Ice Cream Co., 133 Ogden Avenue, Milwaukee, which built the substructure and basement of a proposed four-story garage and service building, 120 ft. sq., last spring, will now begin the construction of the superstructure. Practically an entire floor will be set aside as a machine shop. Leenhouts & Guthrie, 420 Jefferson Street, Milwaukee, are the architects.

The Kohler Co., Kohler, Sheboygan County, Wis., will close bids Oct. 15 for a new enameling shop, 67 x 120 ft., and a one-story packing room, 60 x 140 ft. Alfred Treick is engineer in charge.

The Pawling & Harnischfeger Co., Milwaukee, has taken an order for a large excavating machine for a mining interest in Mexico, which is the forerunner of other large requirements to be placed within the coming six months, it is stated.

The Thurner Heat Treating Co., 126 Ferry Street, Milwaukee, which recently incorporated with a capital stock of $50,000, is letting contracts through George Kemnitz, architect, 1107 Island Avenue, for the first unit of a new plant at 487-495 National Avenue. The initial building will be 48 x 80 ft., and with equipment will cost about $25,000. Rudolph J. Thurner is president and general manager.

The Racine Investment Co., 401 Lake Avenue, Racine, Wis., has let the general contract to the Charles O. Johnson Co., 224 South LaFayette Avenue, for a $50,000 garage and service building for the Lawson Motor Co. It will be 82 x 122 ft., part two and three stories. Edmund B. Funston is the architect.

The Marion Light & Power Co., Marion, Wis., has been incorporated with a capital stock of $25,000 to establish a commercial light and power plant and transformer station to use hydroelectric current purchased from other sources. F. H. Josslyn, Oshkosh, Wis., is the chief owner.

The Chas. W. Fish Lumber Co., Elcho, Wis., is placing contracts for a considerable list of new sawmill and woodworking equipment for the reconstruction of the part of the plant which was destroyed by fire on Sept. 8. The loss was $150,000. Charles W. Fish is president and general manager.

The Koehring Co., 3100 Concordia Avenue, Milwaukee, manufacturer of concrete mixers, pavers, contractors' hoists and gas engines, will soon enter the market for a large list of miscellaneous equipment for a one-story brick and steel addition, 120 x 360 ft. Plans are being completed by Van Ryn & DeGelleke, 114 Grand Avenue, Milwaukee. Bids for the building probably will be taken after Nov. 1. Philip A. Koehring is secretary-treasurer.

The Winther Motor Co., Kenosha, Wis., has been incorporated in Wisconsin with $500,000 capital stock by the stockholders' protective committee which recently bid in the assets of the bankrupt Winther Motors, Inc., for $130,000 and will reopen the plant about Nov. 1. Some retooling will be necessary but details have not been given out. R. D. Moch, president Bessemer Motor Truck Co., Grove City, Pa., and formerly vice-president Hydraulic Pressed Steel Co., will be active manager of the property. Dr. E. W. Timm, 922 Third Street, Milwaukee, chairman of the stockholders' committee, will be president.

The Gridley Dairy Co., 120-130 Eighth Street, Milwaukee, will invest about $35,000 in enlarging the power house of its branch plant at 1329-1335 North Avenue, by an addition, 30 x 105 ft., and is buying additional engine, boiler and refrigerating equipment. John LeFeber is president.

The Nestles Food Co., New York, plans immediate reconstruction of its powdered milk plant at Valders, Sheboygan County, Wis., wrecked by explosion and fire on Oct. 1, which caused a loss of $90,000 or more.

The Wacho Mfg. Co., Milwaukee, has been incorporated with a capital stock of $30,000 to manufacture machinery for repairing milk cans and other sheet metal containers. The principals are E. J. Cunningham, C. G. Ortmayer and A. E. Welch, 204 Browning Building, local. A statement concerning plans will be made later.

The city of Appleton, Wis., will soon be in the market for additional boilers, pumps and filtration equipment for an extension of the filtration plant of the municipal water system. Contract for the building has been let to the Appleton Construction Co. at $20,000.

Roman Kalpinski, Eighth Avenue and Mitchell Street, Milwaukee, has let contracts through Voelz & Siebert, architects, 373 Broadway, local, for a garage and machine shop, 45 x 120 ft., part two stories and basement, estimated to cost $30,000.

The Gulf States

BIRMINGHAM, Oct. 8.

NEGOTIATIONS are under way by the Coosa Pipe & Foundry Co., Gadsden, Ala., for the purchase of additional property for extensions. Otto Agricola heads the company.

The Ford Motor Co., Highland Park, Mich., has authorized plans for a two-story assembling plant, 150 x 200 ft., at Dallas, Tex., to cost $200,000 with equipment. Albert Kahn, 1000 Marquette Building, Detroit, is architect.

The Common Council, Leesville, La., is planning for the installation of electrically-operated pumping machinery in connection with a new waterworks system to cost about $150,000. E. T. Archer & Co., 609 New England Building, Kansas City, Mo., are engineers.

The Madison Oil & Coal Co., Westheimer Building, Houston, Tex., is planning the construction of a coal tipple and power plant at its properties near Calvert, Tex., and the installation of mine cars and other equipment. A portion of the machinery previously used at another location will be removed to the new site. Hall Etter is president and general manager.

The Bessemer Galvanizing Works, Inc., Bessemer, Ala., is perfecting plans for a new factory for the production of galvanized bolts, nails and kindred products. A complete galvanizing works will be installed.

The Kansas City Southern Railway Co., Kansas City., Mo., will commence the erection of a one-story car repair shop, 100 x 300 ft., at its terminal at Shreveport, La. J. M. Weir is chief engineer.

Fire, Sept. 23, partially destroyed the Dallas, Tex., branch of the Westinghouse Electric & Mfg. Co., 701 Elm Street, with loss estimated at $50,000. It will be rebuilt.

The Alabama Power Co., Birmingham, has tentative plans for a new hydroelectric power plant on the Coosa River, near Gadsden, Ala., with ultimate capacity of 100,000 hp. It will cost in excess of $3,500,000, with transmission system. The company has acquired the plants and property of the Tuscaloosa Railway & Utilities Co., Tuscaloosa, Ala., and plans a bond issue of $4,000,000, a large part of the proceeds to be used for extensions and the installation of additional machinery.

The Faust Brothers Lumber Co., 53 West Jackson Boulevard, Chicago, has construction in progress on a new band mill at Jackson, Miss., to be equipped for a daily output of 60,000 ft. It will cost in excess of $125,000, with electric power and other machinery. The company has acquired the local mill of the Henry Maley Lumber Co., Jackson, with rated capacity of 40,000 ft. per day, and will continue in operation.

The Electrical Mfg. & Developing Co., Greensboro, Fla., has inquiries out for electric machinery, also for concrete mixers and kindred equipment, and for two water turbines, with auxiliary equipment.

The new pulp mill to be erected by the Great Southern Lumber Co., Whitney Building, New Orleans, will be operated in the name of the Bogalusa Paper Co., Bogalusa, La., a subsidiary organization. It will vary from two to five stories, 200 x 600 ft., with power house, estimated to cost close to $600,000 with machinery.

R. L. Hopkins, Huntsville, Ala., operating a marble works on Lee Street, has acquired the plant of the Southern Stone & Marble Co., and will consolidate the properties. Extensions will be made and additional finishing and other machinery installed.

The Universal Gypsum Co., Chicago, is disposing of a preferred stock issue of $1,000,000, the proceeds to be used for the construction of its proposed plant at Rotan, Tex., on which preliminary work has commenced. Tentative plans are under consideration for a new mill at Port Clinton, Ohio, to cost more than $500,000 with machinery. The company recently acquired a controlling interest in the Gypsolite Co., Batavia, N. Y. J. F. Haggerty is secretary.

The Galveston, Harrisburg & San Antonio Railroad Co., San Antonio, Tex., operated by the Southern Pacific Railroad Co., has plans for an addition to its engine house and repair shop on Hackberry Street, to cost about $65,000.

The Baton Rouge Ice Co., Baton Rouge, La., is having plans drawn for a five-story addition to its cold storage plant at Louisiana Avenue and Repentance Street, 100 x 100 ft., to cost $90,000 with machinery. George E. Wells is company engineer.

The Garrett Motor Co., 1107 Commerce Street, Fort Worth, Tex., will install a machine shop at its proposed two-story service and repair works, for which plans will soon be drawn.

The Central South

ST. LOUIS, Oct. 8.

THE Illinois Power & Light Co., Peoria, Ill., has tentative plans for a new steam-operated electric power plant in the vicinity of Tecumseh, Kan., estimated to cost $2,200,000, including transmission system.

Manual training equipment will be installed in the two-story and basement junior high school to be erected at Thirty-ninth Street and Hyde Park Avenue, Kansas City, Mo., estimated to cost $500,000, for which bids are being taken on a general contract. C. A. Smith, 602 Finance Building, is architect; J. A. Brady, Library Building, is mechanical engineer.

The Union Iron Works, Inc., Union, S. C., is perfecting plans for a new plant to replace the portion of its works destroyed by fire several weeks ago, with loss approximating $25,000. J. M. Morse heads the company.

The Common Council, Okmulgee, Okla., plans the installation of electrically-operated pumping machinery in connection with extensions in the municipal waterworks to cost $1,000,000. Burns & McDonnell, Kansas City, Mo., are engineers.

Work has commenced on a new two-story and basement plant, 40 x 305 ft., by the Security Metal Products Co., 2416 East Eighteenth Street, Kansas City, Mo., to cost $40,000, for which a general contract recently was awarded to John Gosling, 243 Railway Exchange Building.

The Board of Directors, University of Kentucky, Lexington, is considering plans for a central power house for all buildings, estimated to cost $200,000 with equipment.

The Water Commission, Tulsa, Okla., will receive bids until Oct. 26 for equipment for the Mohawk Pumping Station to be used in connection with the Spavinaw water supply project for municipal service, including aerator, sluice gates, pumps, etc. J. D. Trammell and W. R. Holway, 508 Wright Building, are engineers. Dabney H. Maury, 1445 Monadnock Block, Chicago, is consulting engineer.

Fire, Sept. 25, destroyed a portion of the plant of the McGrew Coal Co., Lexington, Mo., including power plant and

machine shops, with loss estimated at $90,000. It is planned to rebuild.

The Southern Arkansas Oil Co., Pine Bluff, Ark., recently organized with a capital of $1,000,000, is contemplating the establishment of a plant estimated to cost $150,000 with equipment. Frank P. Tomlinson is president.

Fire, Oct. 2, destroyed one of the buildings at the plant of the Southern Engineering Co., East Washington Street, Louisville, used as a general machinery repair works, with loss estimated at $27,000. It is planned to rebuild.

The Kentucky Face Brick Co., Second National Bank Building, Ashland, Ky., recently organized with a capital of $500,000, is perfecting plans for the erection of works to manufacture face brick, building tile, etc., with electric power plant, estimated to cost $150,000. A. J. Russell is secretary.

Manual training equipment will be installed in the proposed two-story and basement high school to be erected at Centerview, Mo., estimated to cost $100,000. Charles A. Smith, 800 Finance Building, Kansas City, Mo., is architect.

The City Foundry, St. Louis, recently organized with a capital of $40,000, will operate an existing foundry at 811 Park Avenue, specializing in the production of gray iron castings. It is purposed to develop an output of about 50 tons per day. Fred W. Priep is president, and Henry F. Welsch, secretary and treasurer.

The Wabash Railway Co., Railway Exchange Building, St. Louis, has awarded a contract to the T. B. Smith Co., Decatur, Ill., for an addition to its local car and locomotive shops, to cost $150,000 including equipment.

Fire, Sept. 24, destroyed a portion of the J. B. Rolater Building, 24 West First Street, Oklahoma City, Okla., occupied by the Sigmon Furniture Mfg. Co., Western Electric Co. and the Mee-Oakes Auto Supply Co., causing a combined loss of about $100,000, including equipment. The different plants will be re-established.

The Pacific Coast

SAN FRANCISCO, Oct. 3.

PLANS have been filed by the San Pedro Lumber Co., Wilmington and San Pedro Roads, Wilmington, Los Angeles, for a one-story machine shop, saw mill and electric power station, to cost about $23,000 exclusive of machinery.

The De Carie Incinerator Co., Portland, Ore., manufacturer of garbage disposal machinery, is arranging for the removal of its plant to Sacramento, Cal., for considerable increase in production, including a new department for the manufacture of steam machinery and parts.

The National Paper Products Co., a subsidiary of the Zellerbach Paper Co., 534 Battery Street, San Francisco, has acquired a 25-acre tract at Santa Ana and Independence Avenues, Cudahy, near Los Angeles, for a new plant, estimated to cost $2,000,000 with machinery. A power house and machine shop will be erected.

S. M. Feazle, The Dalles, Ore., has plans for the construction of a new lumber mill and box manufacturing plant, to cost about $50,000 including machinery. It is proposed to install electrically-operated equipment.

The Barnett Auto Body Co., 430 Golden Gate Avenue, San Francisco, is planning for the removal of its business to another location for enlargements and additional equipment.

Fire, Sept. 25, destroyed a portion of the industrial alcohol manufacturing plant of the Mason Distillery Co., Sausalito, Cal., with loss estimated at $100,000 including equipment. It is planned to rebuild.

The Consolidated Independent Sugar Co., Salt Lake City, Utah, has acquired the sugar mill and property of the Fallon Beet Sugar Co., at Fallon, Nev. Plans are being considered for extensions and the installation of additional equipment.

Mathew Brothers, 1661 West Washington Street, Los Angeles, manufacturer of batteries and other kindred electric equipment, has purchased a site at 1729 Santee Street for a new plant. It is expected to commence work early next year.

The Richfield Oil Co., Los Angeles, plans the construction of a new distrubuting plant at Fresno, Cal., to cost about $200,000 including equipment. C. M. Fuller is president.

The American Quick Coupling Co., Robert Dollar Building, San Francisco, has arranged for the operation of a plant at 1168 Bryant Street, for the manufacture of a new type of metal coupling. E. C. Northrup and Arthur Browne head the company.

The Christie Machine Works, 193 Fremont Street, San Francisco, will remove its plant to a building at 222 Howard Street, where additional equipment will be installed.

C. B. Bellows, Dodge Automobile Sales Agency, Long Beach, Cal., will install a machine shop in his new works at Twentieth Street and American Avenue, two-stories, 120 x 170 ft. The Austin Co., 737 Bartlett Building, Los Angeles, is preparing plans and will probably receive the general contract.

The Otis Elevator Co., 2300 Stockton Street, San Francisco, has plans for a two-story factory branch and repair shop, 135 x 275 ft., estimated to cost $350,000, including machinery.

Manual training equipment will be installed in the new group high school to be erected at Santa Monica, Cal., estimated to cost $200,000, for which plans are being prepared by Allison & Allison, 1405 Hibernian Building, Los Angeles, architects.

The Atlas Mixed Mortar Co., Los Angeles, has acquired the rock crushing plant of the Lawrence-Moore Co., Stough Canyon section. Plans are under way for enlargements and the installation of additional machinery. G. W. Moore, formerly connected with the selling company, has been appointed general manager at the local works.

William N. Voegtly, Jr., 625 Market Street, San Francisco, is inquiring for a forging press of about 500 tons capacity, available for prompt shipment.

Canada

TORONTO, Oct. 8.

THE demand for machinery and machine tools continues and sales the past week or two are somewhat better than for the corresponding period a month ago. While interest is still being shown in new equipment, second-hand and re-built lines are forging steadily ahead. Inquiry for machine tools is more pronounced and covers all lines of industry but in most cases requirements are for one or two tools for replacement purposes, and for additions recently completed or now under way.

Hay & Co., Woodstock, Ont., are in the market for a 7 x 12, two drum hoisting engine.

The Gummed Paper Co., Henderson Street, Brampton, Ont., will build an addition to cost $12,500 and will purchase machinery to the value of $5,000.

The Castle Trethewey Mines, Ltd., Standard Bank Building, Toronto, propose to erect a 100-ton mill at Gowganda, Ont., under supervision of F. J. Ennis, consulting engineer, Porcupine Mines, Schumacher, Ont.

The International Fibre Board Co., Ltd., Canada Cement Building, Montreal, contemplates the erection of a factory at Midland, Ont.

Atchison & Co., Cornwall, Ont., are in the market for equipment for planing mill.

J. V. Dore, 260 St. Helene Street, Quebec, is in the market for machinery for a blacksmith and machine shop.

Findlay Brothers, Carleton Place, Ont., manufacturers of stoves, furnaces, etc., are preparing to manufacture electric stoves and are installing an electric annealing oven of 100 hp., capacity.

The Globe Printing Co., 124 St. Paul Street West, Montreal, is in the market for printing presses, paper cutter, etc.

P. Tranchemontagne, Fournier, Ont., manufacturer of vehicles, etc., is asking for woodworking machinery and tools.

The Fort William Paper Co., Fort William, Ont., proposes to practically double the present capacity of its mills. It is estimated that the addition will involve an expenditure of between $2,000,000 and $4,000,000 and will bring the output of the plant up to about 400 tons of newsprint per day.

The Castle Trethewey Mines, Ltd., Standard Bank Building, Toronto, Ont., proposes to buy complete equipment for a milling plant.

The Mica Mine, J. B. Lalonde, purchasing agent, Mica, Que., is in the market for hammers, drills, air compressors, etc.

A. Belanger, Ltd., Montmagny, Que., is in the market for equipment and machinery for the manufacture of stoves, etc. C. Belanger is purchasing agent.

The Garden City Paper Co., Merritton, Ont., will build an addition to its paper mill at St. Catharines, Ont., to cost $400,000 and is interested in prices on equipment.

Fallow Brothers, Water Street, Cornwall, Ont., is in the market for polishing and cutting machinery and tools for marble works. A. Fallow is purchasing agent.

The Italian Mosaic & Tile Co., Toronto, has secured a site on Bridgeman Street, and will erect a factory.

The Great Lakes Pulp & Paper Co., Fort William, is

completing arrangements for a pulp and paper mill to cost $3,000,000. Howard Ferguson, New York, N. Y., is engineer.

The Essex Border Utilities Commission, is having plans prepared for a filtration plant at Ford, Ont., to serve five municipalities at a cost of $150,000. Bids will be received about Nov. 1. J. C. Keith, 300 Ouellette Avenue, Windsor, Ont., is engineer. Material and equipment will be purchased by the Commission.

The West Dome Consolidated Mines, H. M. Pellatt Building, Bay Street, Toronto, is in the market for drills for underground work for mines at South Porcupine, Ont.

The Canadian Dirigible Headlight System, Quebec, will purchase machinery for the manufacture of lighting devices for steam and electric railroads. W. Stoleo, 3 Aberdeen Avenue, Quebec, is interested.

STEEL AND INDUSTRIAL STOCKS

The range of active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers...	40	41¾	Inland Steel	36	37⅜
Am. B. S. & Fdy.	70	70½	Int. Har.	74¼	76½
Am. Can	88¾	94⅛	J. & Laughlin pf.	108	108
Am. Can pf.....	106½	107	Lima Loco.	62⅛	65⅜
Am. Car & Fdy..	153⅛	159	Midvale Steel ..	25⅛	26¼
Am. C. & F. pf..	118	118	Nat.-Acme	8⅝	8¾
Am. Locomotive.	68⅞	72¼	Nat. En. & Stm..	45	52¾
Am. Loco. pf....	116	116	N. Y. Air Brake.	36¼	37⅞
Am. Radiator...	81½	82¼	Nova Scotia Stl..	14½	19
Am. Roll. Mill pf.	98	98	Otis Steel	7⅜	7⅞
Am. Steel Fdries.	34	35¾	Pressed Stl. Car.	49	51
Am. Stl. Fd. pf..	100¾	100¾	Pressed Stl. pf..	86¼	86½
Bald. Loco.....	113	120¾	Replogle Steel ..	10	11⅜
Bald. Loco. pf..	114	114	Republic	42¾	45⅝
Beth. Steel	47⅜	49¾	Republic pf.	84¾	85⅝
Beth. Stl. 7% pf.	90½	92	Sloss-Sheffield ..	40¼	41½
Beth. Stl. 8% pf.	104	104⅞	Steel of Canada.	67½	68½
Br. Em. Stl. 1 pf.	60	60	Superior Stl. 1 pf.	97½	97½
Br. Em. Stl. 2 pf.	17½	18⅝	Un. Alloy Steel..	30	31½
Chic. Pneu. Tool	79⅞	81½	U. S. Pipe.....	30½	40
Colo. Fuel	26	28¼	U. S. Pipe pf....	79	82¼
Crucible Steel ..	58¼	63	U. S. Steel.....	86⅜	89½
Crucible Stl. pf..	86	86	U. S. Steel pf...	117¼	119
Deere pf.	63	63	Vanadium Steel.	28⅝	29⅞
Gen. Electric ...	170⅛	173	Va. I., C. & Coke	54	54
Gt. No. Ore Cert.	27	30⅜	W'house Air Br..	82	82
Gulf States Steel	74⅛	80¼	Y'gstown S. & T.	65¼	65¼

Industrial Finance

The Board of Directors, Vulcan Iron Works, Wilkes-Barre, Pa., has been authorized to increase the capital of the company as conditions may require up to an amount of $3,000,000.

Kern Dodge has been appointed temporary receiver for the Vim Motor Truck Co., Philadelphia, Pa., with bond of $50,000. It is stated that the company has assets showing a book value of $2,468,081, with debts amounting to $1,301,277, and an additional capital stock liability of $650,000.

Gross income of the American Ship Building Co. for the year ended June 30, 1923, after manufacturing expenses, was $2,010,092. Deducting taxes and other expenses there was net profit from operations of $238,472. The addition to surplus for the year without provision for dividends was $765,115.

W. F. Robertson, president W. F. Robertson Steel & Iron Co., Cincinnati, who recently purchased the plant of the Hudson Sheet & Tin Plate Co., Marietta, Ohio, has made no definite plans for the future operation of the mill. The plant is being put in first class condition and, according to Mr. Robertson, very little work will be required to get it ready. It is understood that negotiations are in progress with a number of Eastern capitalists for the organization of a can manufacturing company to build a plant in Marietta and that this company will take practically all the product of the Hudson mills. Definite announcement of the organization of this company is expected to be made in the next few weeks.

Owing to the forthcoming termination of its charter through statutory limitations, the Robesonia Iron Co., Ltd., manufacturer of pig iron at Robesonia, has transferred its property and its business to Robesonia Iron Co. No change of ownership or of personnel is involved, and the new company merely succeeds the old one and business will be transacted as before. The officers of the new company are: William C. Freeman, president; Allen Butler, vice-president; Robert C. Lea, secretary and treasurer. Its main office, occupied jointly with the company's sales agents, Robert C. Lea & Co., is at 426 Stephen Girard Building, Philadelphia. Walter A. Barrows, Jr., with offices at Robesonia, Berks County, Pa., is manager in charge of the company's blast furnace and ore mining operations.

NEW TRADE PUBLICATIONS

Regenerative Furnace Control.—American Heat Economy Bureau, Wabash Building, Pittsburgh. A 12-page pamphlet by K. Huessner on control of coke-oven gas-fired open-hearth furnaces. The paper was presented as discussion on the "Economical Use of Fuel in Steel Plants" at the Buffalo meeting in September of the Association of Iron and Steel Electrical Engineers, and has now been reprinted.

Polyphase Motors.—Century Electric Co., St. Louis. A small pamphlet and a retail price list covering squirrel cage induction motors, type SC of ¼ hp. to 5 hp., and designed for 2 or 3-phase current. An accompanying sheet gives delivery charges for various locations. The tabular matter in the retail price list gives pulley dimensions, rotative speed, weights, and amperes under varying conditions.

Light Reflectors.—National X-Ray Reflector Co., 235 West Jackson Boulevard, Chicago. Folders 427, 428 and 429 are devoted to reflectors of various types for throwing light where it is needed for best illuminating effects. They are designed to diminish eye-strain, and the particular ones illustrated are intended for office and show-window use.

Gas Valve Control System.—Selas Co., Philadelphia. An 88-page catalog devoted to the industrial application of gas in the interest of fuel saving. The system includes a machine designed to maintain automatically at a constant value any desired gas pressure. The specific gravity of the gas is regulated, stabilized and rendered constant. Specific applications covered in the pamphlet show heat treating equipments, stereotype pots, rivet forges, baking ovens, blow torches, oil forges, enameling and japanning, etc. Engineering service is included with each equipment, and the advantages are said to include low first cost and maintenance cost, steady and silent operation, low operating cost, and automatic operation independent of the operator's skill.

Pulverized Coal in Malleable Foundries.—Grindle Fuel Equipment Co., Harvey, Ill. Bulletin No. 6 of 16 pages is devoted to the use of powdered coal for furnaces melting malleable iron. Advantages claimed are the elimination of hand firing, with its intermittent character, and consequent reduction of labor, saving in time, in fuel, and in furnace lining repairs, due to more constant temperature, saving in metal, because of a steady temperature and better combustion, a higher percentage of good castings, due to fewer blow holes. Melting capacity of the furnace is estimated at 25 to 50 per cent greater, while smoke, ash and slag are greatly lessened. As applied to annealing furnaces, somewhat the same conditions are reported.

Positive Pressure Blowers.—Connersville Blower Co., Connersville, Ind., Catalog No. 21, 9 x 12 in., 63 pages. Describes and illustrates various blowers made by the company and the different drive arrangements, giving also the application of the blowers in various processes and industries. Different types of blowers are compared and construction and advantages of the company's standard blower described in detail. Illustrations are numerous and the descriptions clear and well arranged.

Tachometers.—The Bristol Co., Waterbury, Conn. Bulletin No. 317 of 32 pages describing both pneumatic and electric types of recording and indicating tachometers. Specimen charts are shown, samples of work done and illustrations of various models. Details to assist in ordering are given. Size 8 x 10½ in.

New Tool Price List.—Consolidated Tool Works, Inc., 296 Broadway, New York, Catalog "E" and a new quotation sheet, No. 29, effective Oct. 1, on its entire line.

Blast Furnaces.—William B. Pollock Co., Youngstown, Ohio. Booklet illustrating a new 60-ton charcoal blast furnace which the company fabricated for the Maharajah of Mysore, India, to be operated by the Bhadravati Mysore State Railways.

Herbert W. Hayes, 40 Court Street, Boston, has been appointed district sales agent of the Surplus Steel Exchange, New York. Mr. Hayes has been connected with the steel trade in New England for 30 years, having been agent for the Cambria Steel Co. during that period. The Boston office will cover all the New England States, with the exception of Connecticut. Mr. Hayes also has been appointed district sales manager for the New England National Drawn Steel Co., East Liverpool, Ohio.

Plans of New Companies

The Miller Utility Co., New York, has been incorporated with capital stock of $100,000 to manufacture cooking utensils and similar products. It does not propose manufacturing immediately but as soon as organization matters are completed, plans for operation will be considered. The incorporators are W. P. Miller and N. J. Karayanis, care of William Cristwell, 150 Nassau Street, New York.

The Progress Watch Co., New York, incorporated with capital stock of $30,000 will manufacture watches and watch movements. J. and L. Feinstein and I. Nuchman are the incorporators. Plans for operation will be developed later. Address care of Bertrand Ettinger, 50 Court Street, Brooklyn.

W. B. Wason, Inc., Nassau Street, New York, organized with capital stock of $20,000 to manufacture cabinets, will for the time being confine activities to handling cabinet makers' tools for manufacturers. A. C. Rippier, W. B. and A. B. Wason are the incorporators. C. H. Luscombe, 41 Park Row is representative.

The Royal Standard Co., 429 Sixth Avenue, New York, has been organized to manufacture metal products, chief of which will be boilers. Initial capacity is estimated at 25 boilers per week. Equipment on hand is sufficient for present needs. F. Stiffler and R. and M. Morgan are the principals.

The Walker-Ely Products Co., 388 Broadway, New York, has been incorporated with capital stock of 1500 shares of no par value stock and purposes to manufacture vaults and like products. Details of manufacturing will not be taken up for some time, and a plant may be purchased somewhere in the Middle West.

The Enameled Steel Products Co., Elizabeth, N. J., incorporated with $25,000 capital stock, will manufacture enameled iron and steel products, but it is unlikely that operations will begin for some time. A. J. Davis, 215 Broad Street, Elizabeth, represents the company.

The Field Hardware Mfg. Co., 111 East Thirty-first Street, Kansas City, Mo., incorporated with $25,000 capital stock,, will continue an established business in the manufacture of hardware building specialties. E. Stanley Field is general manager.

The Acorn Iron Works, Russel and Alluvion Streets, Baltimore, incorporated with capital stock of $25,000 will manufacture fire escapes, iron stairs, elevator inclosures and bank railings. John Klein is secretary.

Towne Mines, Inc., subsidiary of the American Smelting & Refining Co., which recently purchased the properties of the Compania Metalurgica Mexicana, is planning the construction of an arsenic plant to be built at San Luis Potosi at an estimated cost of $400,000. This plant will be an auxiliary to the new copper smelter to be built at the same place at a cost of $1,500,000.

Craig Oil Tool Co., with office and plant at Mendocino and Water Streets, Long Beach, Cal., has been organized with capital stock of $100,000 and will manufacture oil well tools and supplies. The company has leased a machine shop formerly operated by a shipyard and is amply equipped for present demands. J. F. Craig is president; W. W. Cole, vice-president and general manager; L. D. Gardiner, secretary-treasurer.

The Bridgeport Automotive Products Co., 1427 Railroad Avenue, Bridgeport, Conn., recently incorporated with capital stock of $50,000 to manufacture automobile parts and equipment, advises that no construction is contemplated at this time. The incorporators are Robert B. Davis, Governor Stinson, and George W. Hudson, Popular Terrace, Bridgeport. M. F. Judd of the Raybestos Co. is vice-president.

The Hershey Forms & Construction Co., recently organized under Pennsylvania laws, will manufacture patented forms for concrete construction work. Plans are indefinite but it is expected that a building will be secured for manufacturing purposes and at that time equipment will be needed for cutting and boring steel and for forging parts. Other equipment including concrete mixers, carriers, and shovels may also be needed. Address care of P. H. Hershey, Dauphin, Pa.

B. J. Mockenhaupt & Co., 217 North Des Plaines Street, Chicago, have been appointed sales representatives in the Chicago district for the Reinforced Switch & Mfg. Co., Pittsburgh.

The Morelite Intensified Corporation, New York, has been incorporated with $100,000 capital stock and will manufacture projectors and electric lighting equipment, principally for motion picture service. Lester Neuberger and Irving Kabat are the incorporators. Representative is Max Greenberg, 112 Madison Avenue.

The Oil Heater Distributing Co., 51 West Forty-second Street, New York, incorporated with $50,000 capital stock, has secured Eastern rights for the Marvel oil heater, manufactured by the Marvel Motor Co., Chicago. Warehouses will be maintained at several points in the East, but central quarters will be in New York. No manufacturing will be done, James B. Pinkham, D. G. Nelson and E. P. Lanfranchi are the incorporators.

The Skinner-Hill Co, Canadian Pacific Building, New York, has been incorporated with $100,000 capital stock as importers of brass, bronze, copper and other metal products. The company will act as United States and Canadian representative of Pearson-Page Co., Ltd., and the Hill-Ouston Co., Ltd., Birmingham and London, England. The incorporators are E. R. Mead, A. G. and S. P. Skinner, 228 Seeley Street, Brooklyn.

The Cavilla Egg-Timing Machine Co., 61 Lispenard Street, New York, has been incorporated with $100,000 capital stock to manufacture electric equipment for domestic service. Plans for operation are still indefinite. Herbert Goldthorpe, Thomas Borras and R. J. Cavilla are the incorporators. Julius H. Reiter, 415 Broadway, is corporate representative.

The Post Radio & Electric Corporation, 21 Flatbush Avenue, New York, has been organized to conduct a business as distributers for makers of wireless equipment and devices. Incorporators are S. Modell, S. S. Leff and M. Silberman.

The Reliant Saw Works, 336 Ogden Street, Newark, N. J., has been organized to manufacture oil burning equipment and circular saws, fitting saw bands from ¼ to ⅛ in. and circular saws up to 72 in. Shop and equipment will be rented. The company expects to carry a stock of small-size saws in the near future. F. H. Clark heads the company.

The Acme Sectional Oil Burner Corporation, New York, has been organized to manufacture oil burning equipment and devices. During the next week plans for operation will be taken up. Louis Marder, M. Dienstein and Charles Pearle, 256 Broadway, New York, are the principals.

The Natstone Manhattan Corporation, 1520 West Farms Road, New Rochelle, N. Y., incorporated with capital stock of $40,000, will manufacture concrete and cement tile for building purposes. G. Vander Roest is secretary-treasurer.

The Grass Gripper Rake Co., 543 West End Avenue, New York, has been organized with $200,000 capital stock to manufacture rakes, hoes and like tools. Manufacturing will be done by contract. Offices are maintained in Chicago and Boston. A. C. Johnstone and John Olsson are the incorporators.

The American Tobacco Machinery Co., Wilmington, Del., incorporated with capital stock of $1,000,000 to manufacture tobacco treating machinery, is only in the formative stage and, though equipment may be required later, nothing will be done in that regard for a considerable time. George J. Wise, 44 West Eighteenth Street, New York, represents the company.

The Walker Hardware Co., 410-12 Main Street, Vincennes, Ind., has been incorporated as a reorganization of the former company by that name. New personnel and financing have been drawn into the concern. The company will operate as jobber and retailer, handling stoves, furnaces and general hardware products. T. M. Shirliff is one of the principals.

The City Foundry Co., St. Louis, recently organized with capital stock of $40,000 to manufacture iron and steel castings, has purchased the foundry business of the Christopher & Simpson Co., that city, and will continue to operate at the old location, 811 Park Avenue. The company will specialize in gray iron castings from 1 lb. to 10 tons. U. S. Arnold is general manager.

The Coltexo Corporation, Monroe, La., has been organized as a consolidation of the Columbian Carbon Co. and the Texas Co., to engage in production of carbon black and natural gas gasoline through the development of properties owned by the Texas Co. in Monroe, and also of the Parks fields of Texas.

The Electrical Mfg. & Developing Co., Greensboro, Fla., has been incorporated with $60,000 capital stock to manufacture electrical equipment and to develop timber lands. Plans call for the construction of a light and power plant, the manufacture of storage batteries, construction of a lumber plant and the building of homes. William Petschel is president.

The Reading Automatic Machine Co., Third and Buttonwood Streets, Reading, Pa., has been incorporated with capital of $50,000 to manufacture machinery. It has acquired the business of the Vertomatic Mfg. Co. and will make vertical automatic machines, special dies, tools and machinery. Louis J. Laroche is one of the heads.

The American Wrench Mfg. Co., Richmond, Va., organized with capital of $25,000, purposes to manufacture wrenches and other tools but has not made definite plans for operation. John D. Blair, 212 North Eighth Street, heads the company.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	
Refined iron bars, base price	3.54c.
Swedish charcoal iron bars, base	7.25c.
Soft steel bars, base price	3.54c.
Hoops, base price	5.19c.
Bands, base price	4.39c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.64c.
Channels, angles and tees under 3 in. x ¼ in. base	3.54c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.60c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	4.10c.
Toe-calk, ½ x ⅜ in. and larger	4.60c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring-steel	5.00c. to 7.50c.
Shafting and Screw Stock:	
Rounds	4.65c.
Squares, flats and hex	5.15c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High speed steel, 18 per cent tungsten	75c. to 80c.

Tank Plates—Steel

¼ in. and heavier	3.64c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.59c.
No. 12	4.64c.
No. 14	4.69c.
No. 16	4.79c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.55c. to 4.80c.	.....
Nos. 22 and 24	4.60c. to 4.85c.	5.10c.
No. 26	4.65c. to 4.90c.	5.15c.
No. 28	4.75c. to 5.00c.	5.25c.
No. 30	4.95c. to 5.20c.	.....

No 28 and lighter, 36 in. wide, 20c. higher.

Galvanized

	Per Lb.
No. 14	4.85c. to 5.10c.
No. 16	5.00c. to 5.25c.
Nos. 18 and 20	5.15c. to 5.40c.
Nos. 22 and 24	5.30c. to 5.45c.
No. 26	5.45c. to 5.70c.
No. 27	5.60c. to 5.85c.
No. 28	5.75c. to 6.00c.
No. 30	6.20c. to 6.50c.

No. 28 and lighter, 36-in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt..	—41	—24	½ in. Butt..	— 4	+19
¾ in. Butt..	—46	—32	¾ in. Butt..	—11	+ 9
1-3 in. Butt .	—48	—34	1-1½ in. Butt	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap.....	— 5	+14
7-8 in. Lap..	—41	—11	2½-6 in. Lap	— 9	+ 9
9-12 in. Lap.	—34	— 6	7-12 in. Lap.	— 3	+16

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per Lb.
Bright basic	5.00c.
Annealed soft	5.00c.
Galvanized annealed	5.65c.
Coppered basic	5.65c.
Tinned soft Bessemer	6.65c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18 c. to 19 c.
High brass wire	18½c. to 19½c.
Brass rods	15¾c. to 16¾c.
Brass tube, brazed	26 c. to 27½c.
Brass tube, seamless	23 c. to 24 c.
Copper tube, seamless	24½c. to 25½c.

Copper Sheets

Sheet copper, hot rolled, 20¾c. to 21¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20	
			Prime / Seconds
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb.	$6.55 / $6.30
		90 lb.	6.65 / 6.40
		100 lb.	6.75 / 6.50
IC	$12.55 / $10.70	IC	7.00 / 6.75
IX	13.95 / 12.55	IX	8.25 / 8.00
IXX	15.55 / 13.75	IXX	9.50 / 9.25
IXXX	17.10 / 15.30	IXXX	10.75 / 10.50
IXXXX	18.85 / 16.80	IXXXX	12.00 / 10.75

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits pig	45c.
Bar	49c. to 56c.

Copper

Lake ingot	16¼c.
Electrolytic	15¾c.
Casting	15¼c.

Spelter and Sheet Zinc

Western spelter	7¾c.
Sheet zinc, No. 9 base, casks	10½c. open 11c.

Lead and Solder*

American pig lead	8¼c. to 8¾c.
Bar lead	11c. to 12c.
Solder ½ and ½ guaranteed	31c.
No. 1 solder	29c.
Refined solder	25c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb	35c. to 50c.
Grade D, per lb	25c. to 35c.

Antimony

Asiatic	9c. to 9½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb	36c.

Old Metals

The market is lower in sympathy with new metals. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible	11.25
Copper, heavy wire	10.75
Copper, light bottoms	9.00
Brass, heavy	5.75
Brass, light	4.75
Heavy machine composition	8.50
No. 1 yellow brass turnings	6.00
No. 1 red brass or composition turnings	7.50
Lead, heavy	6.00
Lead, tea	5.00
Zinc	4.00
Cast aluminum	15.00
Sheet aluminum	15.00